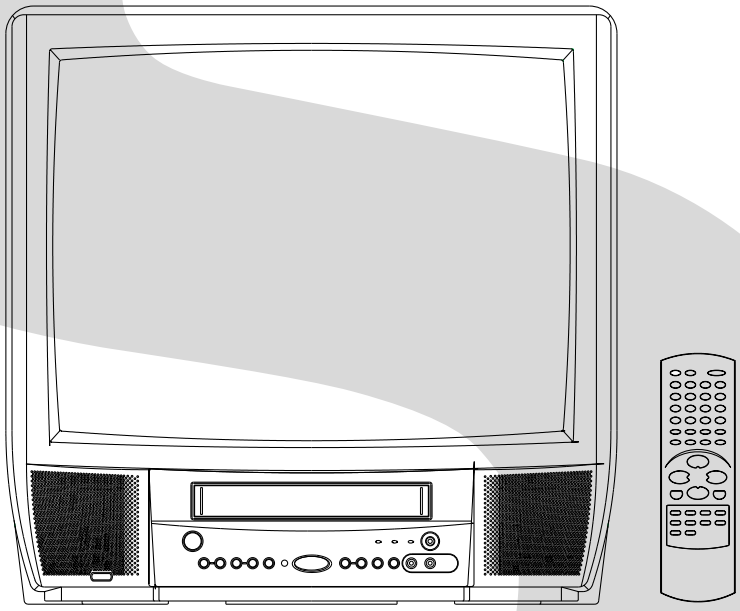
TOSHIBA

FILE NO. 140-200108

SERVICE MANUAL

COLOR TELEVISION/ VIDEO CASSETTE RECORDER

MV19L4



SERVICING NOTICES ON CHECKING

1. KEEP THE NOTICES

As for the places which need special attentions, they are indicated with the labels or seals on the cabinet, chassis and parts. Make sure to keep the indications and notices in the operation manual.

2. AVOID AN ELECTRIC SHOCK

There is a high voltage part inside. Avoid an electric shock while the electric current is flowing.

3. USE THE DESIGNATED PARTS

The parts in this equipment have the specific characters of incombustibility and withstand voltage for safety. Therefore, the part which is replaced should be used the part which has the same character.
Especially as to the important parts for safety which is indicated in the circuit diagram or the table of parts as a ⚠ mark, the designated parts must be used.

4. PUT PARTS AND WIRES IN THE ORIGINAL POSITION AFTER ASSEMBLING OR WIRING

There are parts which use the insulation material such as a tube or tape for safety, or which are assembled in the condition that these do not contact with the printed board. The inside wiring is designed not to get closer to the pyrogenic parts and high voltage parts. Therefore, put these parts in the original positions.

5. TAKE CARE TO DEAL WITH THE CATHODE-RAY TUBE

In the condition that an explosion-proof cathode-ray tube is set in this equipment, safety is secured against implosion. However, when removing it or serving from backward, it is dangerous to give a shock. Take enough care to deal with it.

6. AVOID AN X-RAY

Safety is secured against an X-ray by considering about the cathode-ray tube and the high voltage peripheral circuit, etc.
Therefore, when repairing the high voltage peripheral circuit, use the designated parts and make sure not modify the circuit.
Repairing except indicates causes rising of high voltage, and it emits an X-ray from the cathode-ray tube.

7. PERFORM A SAFETY CHECK AFTER SERVICING

Confirm that the screws, parts and wiring which were removed in order to service are put in the original positions, or whether there are the portions which are deteriorated around the serviced places serviced or not. Check the insulation between the antenna terminal or external metal and the AC cord plug blades. And be sure the safety of that.

(INSULATION CHECK PROCEDURE)

1. Unplug the plug from the AC outlet.
2. Remove the antenna terminal on TV and turn on the TV.
3. Insulation resistance between the cord plug terminals and the eternal exposure metal **[Note 2]** should be more than 1M ohm by using the 500V insulation resistance meter **[Note 1]**.
4. If the insulation resistance is less than 1M ohm, the inspection repair should be required.

[Note 1]

If you have not the 500V insulation resistance meter, use a Tester.

[Note 2]

External exposure metal: Antenna terminal
Earphone jack

HOW TO ORDER PARTS

Please include the following informations when you order parts. (Particularly the VERSION LETTER.)

1. MODEL NUMBER and VERSION LETTER
   The MODEL NUMBER can be found on the back of each product and the VERSION LETTER can be found at the end of the SERIAL NUMBER.
2. PART NO. and DESCRIPTION
   You can find it in your SERVICE MANUAL.

GENERAL SPECIFICATIONS

G-1	**TV System**	CRT		CRT Size / Visual Size	19 inch / 480.0mmV
				CRT Type	Normal
				Deflection	90 degree
				Magnetic Field BV/BH	+0.45G / 0.18G
		Color System			NTSC
		Speaker			1Speaker
				Position	Front
				Size	3 inch
				Impedance	8 ohm
		Sound Output		MAX	1.5 W
				10%(Typical)	1.0 W
G-2	**VCR System**	System			VHS Player / Recorder
		Video System			NTSC
		Hi-Fi STEREO			No
		NTSC PB			-
		Deck		DECK	OVD-6S
				Loading System	Front
				Motor	3
		Heads	Video Head		4 Head
			FM Audio Head		No
			Audio /Control		Mono/Yes
			Erase(Full Track Erase)		Yes
		Tape Speed	Rec	PAL	-
				NTSC	SP/SLP(EP)
			Play	PAL	-
				NTSC	SP/SLP(EP)
		Fast Forward / Rewind Time (Approx.)			FF:4'50"/REW:2'30"
				Cassette	at T-120
		Forward/Reverse Picture Search		NTSC or PAL-M	SP/SLP(EP)=3x,5x/9x,15x
		Slow Speed		Frame Advance	1/10
				Slow	1/10
G-3	**Tuning System**	Broadcasting System			US Sysytem M
		Tuner and Receive CH		System	1Tuner
				Destination	USA+CATV
				Tuning System	F-Synth
				Input Impedance	VHF/UHF 75 ohm
				CH Coverage	2~69, 4A,A-5~A-1, A~I, J~W,W+1~W+84
		Intermediate Frequency		Picture(FP)	45.75MHz
				Sound(FS)	41.25MHz
				FP-FS	4.5MHz
		Preset CH			No
		Stereo/Dual TV Sound			No
G-4	**Signal**	Video Signal		Input Level	1 V p-p/75 ohm
				Output Level	-
				S/N Ratio (Weighted)	50 dB
				Horizontal Resolution at SP Mode	220 Lines
		Audio Signal		Input Level	RCA-8dB/50Kohm
				Output Level	-
		Hi-Fi Audio Signal		Dynamic Range : More than	-
				Wow And Flutter : Less than	-
				Channel Separation : More than	-
				Harmonic Distortion : Less than	-
G-5	**Power**	Power Source		AC	120V 60Hz
				DC	-
		Power Consumption		at AC	86 W at 120V 60Hz
				at DC	-
				Stand by (at AC)	5 W at 120V 60 Hz
				Per Year	-
		Protector		Power Fuse	Yes
				Dew Sensor	No
G-6	**Regulation**			Safety	UL
				Radiation	FCC
				X-Radiation	DHHS
G-7	**Temperature**			Operation	+5oC ~ +40oC
				Storage	-20oC ~ +60oC
G-8	**Operating Humidity**				Less then 80% RH

GENERAL SPECIFICATIONS

G-9	**On Screen Display**	Menu			Yes	
			Menu	Type	Character	
			Timer Rec Set		Yes	
			Channel Setup		Yes	
				TV/CATV	Yes	
				Auto ch Memory	Yes	
				Add/Delete	Yes	
				Guide ch Set		No
			TV Setup		Yes	
				V-chip Set	Yes	
				On/Off Timer Set	Yes	
				Picture	Yes	
				Audio		No
				Sap On/Off		No
			Auto Repeat On/Off		Yes	
			System Setup		Yes	
				Clock Set	Yes	
				Language	Yes	
				Auto Clock On/Off	Yes	
				Standard Time	Yes	
				Daylight Saving Time	Yes	
			Commercial Advance			No
				Marking On/Off		No
				Blueback On/Off		No
				Playback Auto/Manual		No
				Unmarked Tape		No
			Movie Advance			No
				Go To Movie		No
				Go To Preview		No
		G-CODE(or SHOWVIEW or PLUSCODE)No. Entry				No
		Clock			Yes	
		CH/AV			Yes	
		Tape Counter(Linear Counter)			Yes	
		Tape Speed			Yes	
		Sleep Time			Yes	
		Stereo/Audio Output				No
				Bilingal		No
				SAP		No
		Control Level	Volume		Yes	
			Bright / Contrast / Sharpness / Color		Yes	
			Tint		Yes	
			Bass/Treble/Balance			No
			Manual Tracking		Yes	
		Play/Stop/FF/Rew/Rec/OTR/T-Rec/Pause/Eject/Tape In (Symbol Mark)			Yes	
		Auto Tracking/Manual Tracking			Yes	
		Caption / Text			Yes	
		Index				No
		Muting			Yes	
		Hi-Fi ,SAP				No
		Repeat			Yes	
		Zero Return				No
		DEW				No
G-10	**OSD Language**				English French Spanish	
			OSD Language Setting		English	
G-11	**Clock,Timer and Timer Back-up**	Calendar			1990/1/1 ~ 2081/12/31	
		Timer Events			8 prog/ 1 month	
		One Touch Recording Max Time			5 Hours	
		OTPB Valid Time			No	
		Sleep Timer		Max Time	120	min.
				Step	10	min.
		On/Off Timer		Program(On Timer / Off Timer)	1	prog.
		Auto Shut Off		No Signal	15	min.
				No Operation	-	
		Timer Back-up (at Power Off Mode)			5	sec.

GENERAL SPECIFICATIONS

G-12	**Remote Control**	Unit		RC-DQ
		Glow in Dark Remocon		Yes
		Format		NEC
		Custom Code		40-BFh , 44-BBh
		Power Source	Voltage(D.C)	3V
			UM size x pcs	UM-4 x 2 pcs
		Total Keys		43 Keys
		Keys	Power	Yes
			1	Yes
			2	Yes
			3	Yes
			4	Yes
			5	Yes
			6	Yes
			7	Yes
			8	Yes
			9	Yes
			0	Yes
			CH Up	Yes
			CH Down	Yes
			Volume Up	Yes
			Volume Down	Yes
			Input Select	Yes
			Play	Yes
			F.Fwd	Yes
			Rew	Yes
			Pause/Still	Yes
			Stop	Yes
			Rec/OTR	Yes(2Keys)
			Eject	Yes
			Counter Reset	Yes
			Speed	Yes
			Timer Rec	Yes(2Keys)
			TV Monitor	No
			Quick View	Yes
			Program	Yes
			Slow	Yes
			Auto Tracking	Yes
			Set/Tracking+	Yes
			Set/ Tracking -	Yes
			Menu	Yes
			Enter	Yes
			Cancel	Yes
			Call	Yes
			TV/Caption/Text	Yes
			Sleep Timer	Yes
			Muting	Yes
			Zero Return	Yes
			CM Skip	Yes
			Audio Select	No
G-13	**Features**	Auto Head Cleaning		Yes
		Auto Tracking		Yes
		HQ (VHS Standard High Quality)		Yes
		Auto Power On, Auto Play, Auto Rewind, Auto Eject		Yes
		VIDEO PLUS+(SHOWVIEW,G-CODE)		No
		Auto Clock		Yes
		Forward / Reverse Picture Search		Yes
		One Touch Playback		No
		Auto CH Memory		Yes
		Closed Caption		Yes
		TV Auto Shut off Function		Yes
		End Call		No
		Index Search		No
		SQPB		No
		CATV		Yes
		CM Skip(30sec x 6 Times)		Yes
		Comb Filter		No
		TV Monitor		No
		Program Extend		No
		Choke Coil		No
		Energy Star		Yes
		Dirty Head		No
		V-chip	USA V-chip	Yes
			CANADA V-chip	No
		CM Advance		No
		Movie Advance		No
		FBT Leak Test Protect		Yes

GENERAL SPECIFICATIONS

G-14	**Accessories**	Owner's Manual		Language	English
				w/Guarantee Card	Yes
		Remote Control Unit			Yes
		Rod Antenna			No
				Poles	-
				Terminal	-
				w/300 ohm to 75 ohm Antenna Adapter	-
		Loop Antenna			No
				Terminal	-
		U/V Mixer			No
		DC Car Cord (Center+)			No
		Guarantee Card			No
		Warning Sheet			No
		Circuit Diagram			No
		Antenna Change Plug			No
		Service Facility List			No
		Important Safeguard			No
		Dew/AHC Caution Sheet			No
		AC Plug Adapter			No
		Quick Set-up Sheet			No
		Battery			Yes
				UM size x pcs	UM-4 x 2 pcs
		AC Cord			No
		AV Cord (2Pin-1Pin)			No
		Registration Card			Yes
		ESP Card			Yes
		300 ohm to 75 ohm Antenna Adapter			Yes
G-15	**Interface**	Switch		Power	Yes
				Play	Yes
				Pause/Still	No
				System Select	No
				One Touch Playback	No
				Channel Up	Yes
				Channel Down	Yes
				F.FWD/Cue	Yes
				Eject/Stop	Yes
				Main Power SW	No
				Volume Up	Yes
				Volume Down	Yes
				Rew/Rev	Yes
				Rec/OTR	Yes
				Input Select	Yes
		Indicator		Power	Red
				Rec/OTR	Red
				T-Rec	Red
				On Timer	No
				CS	No
		Key Light up		Rec/OTR	No
				One Touch Playback	No
				Play	No
		Terminals	Front	Video Input	RCAx1
				Audio Input	RCAx1
				Other Terminal	Head Phone(Stereo & Mono, ?3.5)
			Rear	Video Input	No
				Audio Input	No
				Video Output	No
				Audio Output	No
				Euro Scart	No
				Diversity	No
				Ext Speaker	No
				DC Jack 12V(Center +)	No
				VHF/UHF Antenna Input	F Type
				AC Inlet	No
G-16	**Set Size**			Approx. W x D x H (mm)	489 x 462 x 480
G-17	**Weight**			Net (Approx.)	19.0 kg (41.8 lbs)
				Gross (Approx.)	22.0 kg (48.5 lbs)

GENERAL SPECIFICATIONS

G-18	**Carton**	Master Carton		No
			Content	-
			Material	-
			Dimensions W x D x H(mm)	-
			Description of Origin	-
		Gift Box		Yes
			Material	Double/White
			Dimensions W x D x H(mm)	559 x 538 x 555
			Design	As per Buyer's
			Description of Origin	Yes
		Drop Test	Natural Dropping At	1 Corner / 3 Edges / 6 Surfaces
			Height (cm)	46
		Container Stuffing(40' container)		352 Sets
G-19	**Cabinet Material**		Cabinet Front	PS 94V0 DECABROM
			Cabinet Rear	PS 94V0 DECABROM
			Jack Panel	PS 94V0

DISASSEMBLY INSTRUCTIONS

1. REMOVAL OF MECHANICAL PARTS AND P.C. BOARDS

1-1: BACK CABINET (Refer to Fig. 1-1)

1. Remove the 6 screws ①.
2. Remove the screw ②.
3. Remove the AC cord from the AC cord hook ③.
4. Remove the Back Cabinet in the direction of arrow.

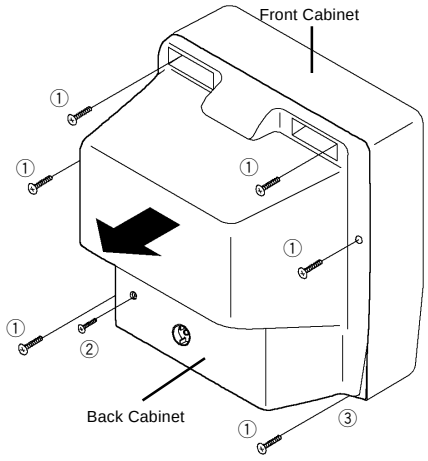


Fig. 1-1

1-2: CRT PCB (Refer to Fig. 1-2)

CAUTION: BEFORE REMOVING THE ANODE CAP, DISCHARGE ELECTRICITY BECAUSE IT CONTAINS HIGH VOLTAGE. BEFORE ATTEMPTING TO REMOVE OR REPAIR ANY PCB, UNPLUG THE POWER CORD FROM THE AC SOURCE.

1. Remove the Anode Cap. (Refer to REMOVAL OF ANODE CAP)
2. Disconnect the following connectors: (CP801 and CP851B).
3. Remove the CRT PCB in the direction of arrow.

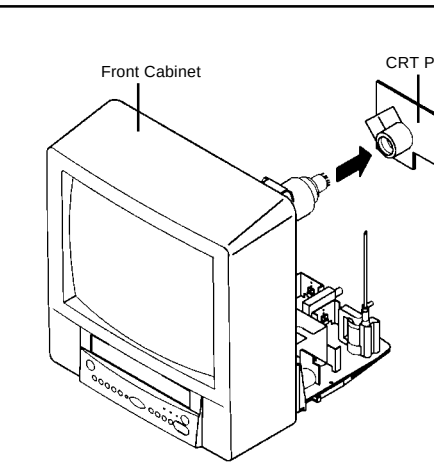


Fig. 1-2

1-3: TV/VCR BLOCK (Refer to Fig. 1-3)

1. Remove the 2 screws ①.
2. Disconnect the following connectors: (CP352, CP353, CP354, CP401, CP502 and CP503).
3. Unlock the support ②.
4. Remove the TV/VCR Block in the direction of arrow.

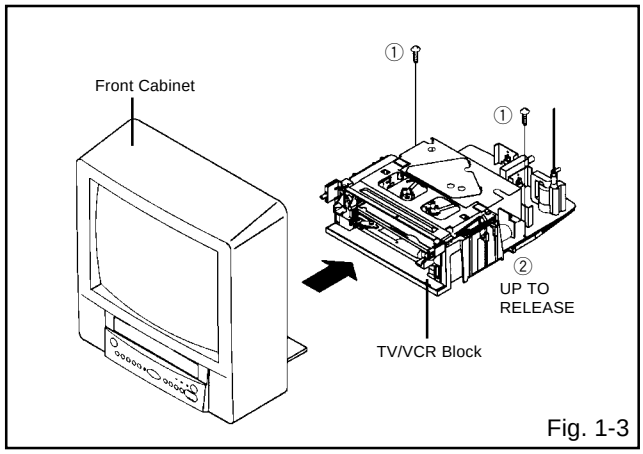


Fig. 1-3

1-4: DECK CHASSIS AND SYSCON PCB (Refer to Fig. 1-4)

1. Remove the 3 screws ①.
2. Remove the 2 screws ②.
3. Remove the screw ③.
4. Remove the screw ④.
5. Disconnect the following connectors: (CP1004, CP1005, CP1006, CP4001, CP4002 and CP4003).
6. Remove the Deck Chassis and Deck Shield Plate in the direction of arrow (A).
7. Remove the screw ⑤.
8. Remove the Syscon PCB in the direction of arrow (B).

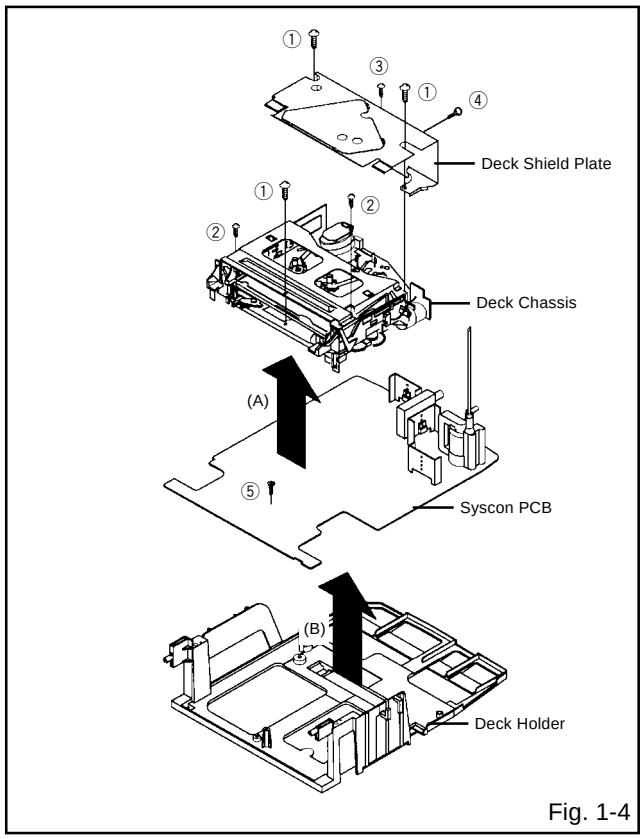


Fig. 1-4

DISASSEMBLY INSTRUCTIONS

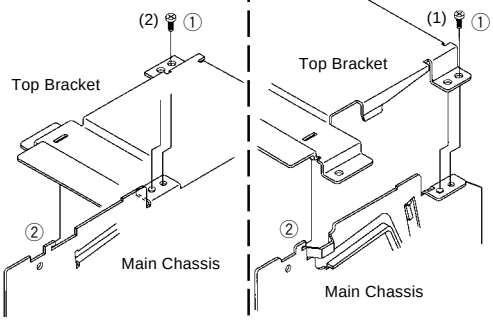
2. REMOVAL OF DECK PARTS

2-1: TOP BRACKET (Refer to Fig. 2-1)

1. Remove the 2 screws ①.
2. Slide the 2 supports ② and remove the Top Bracket.

NOTE

When you install the Top Bracket, install the screw (1) first, then install the screw (2).



• Screw Torque: 5 ± 0.5kgf•cm

Fig. 2-1

2-2: FLAP LEVER/TAPE GUIDE R (Refer to Fig. 2-2)

1. Move the Cassette Holder Ass'y to the back side.
2. Remove the Polyslider Washer ①.
3. Remove the Flap Lever.
4. Unlock the 3 supports ② and remove the Tape Guide R.

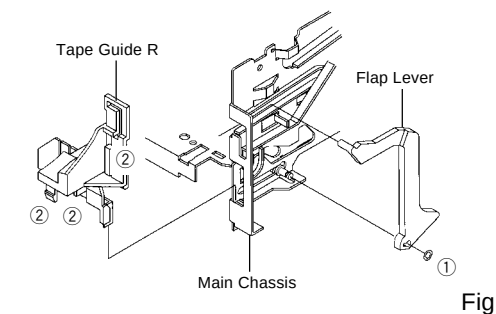
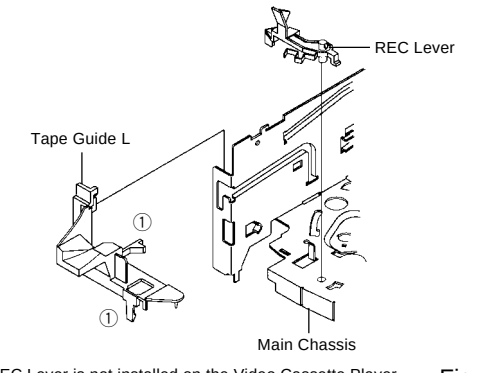


Fig. 2-2

2-3: TAPE GUIDE L (Refer to Fig. 2-3-A)

1. Move the Cassette Holder Ass'y to the back side.
2. Unlock the 2 supports ① and remove the Tape Guide L.
3. Remove the REC Lever. (Recorder only)

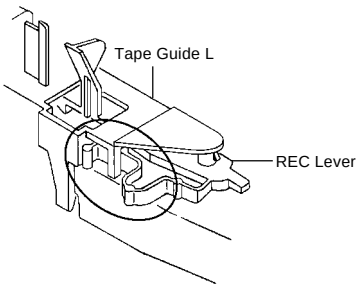


• The REC Lever is not installed on the Video Cassette Player.

Fig. 2-3-A

NOTE

When you install the Tape Guide L, install as shown in the circle of Fig. 2-3-B. **(Refer to Fig. 2-3-B)**



• The REC Lever is not installed on the Video Cassette Player.

Fig. 2-3-B

2-4: CASSETTE HOLDER ASS'Y (Refer to Fig. 2-4)

1. Move the Cassette Holder Ass'y to the front side so that the Link Ass'y doesn't slip out.
2. Push the Locker R to remove the Cassette Side R.
3. Remove the Cassette Side L.

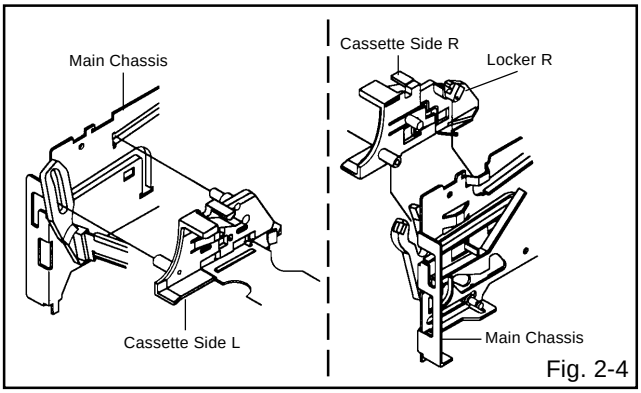


Fig. 2-4

2-5: CASSETTE SIDE L/R (Refer to Fig. 2-5)

1. Unlock the 4 supports ① and then remove the Cassette Side L/R.
2. Remove the Cassette Earth Spring.

NOTE

1. When you install the Cassette Side R, be sure to move the Locker R after installing.
2. After the installation of the Cassette Holder, then install the Cassette Earth Spring.

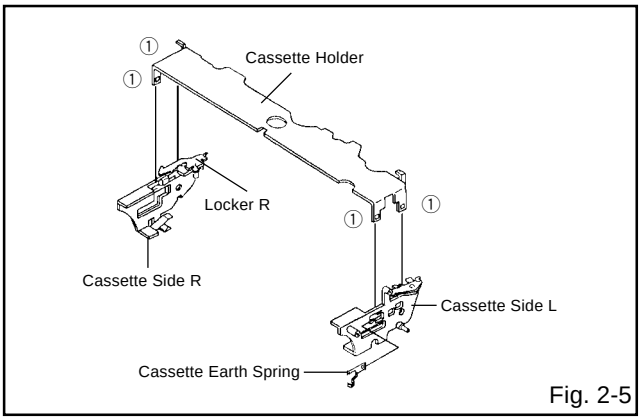


Fig. 2-5

DISASSEMBLY INSTRUCTIONS

2-6: LINK UNIT (Refer to Fig. 2-6)

1. Set the Link Unit to the Eject position.
2. Remove the (A) side of the Link Unit first, then remove the (B) side.

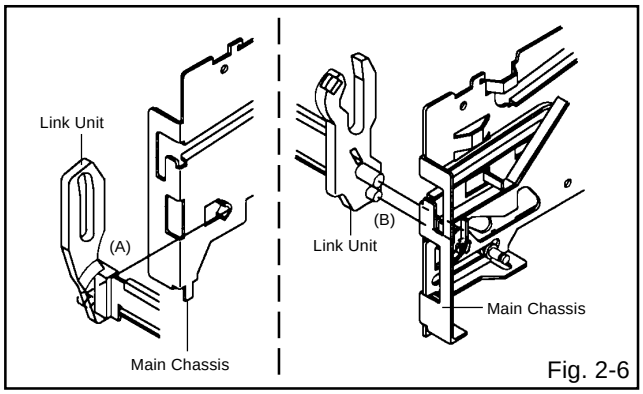


Fig. 2-6

2-7: LOADING MOTOR ASS'Y (Refer to Fig. 2-7)

1. Remove the Link Lever.
2. Remove the screw ①.
3. Remove the Loading Motor Ass'y.
4. Unlock the 2 supports ② and remove the Deck PCB (BOT).

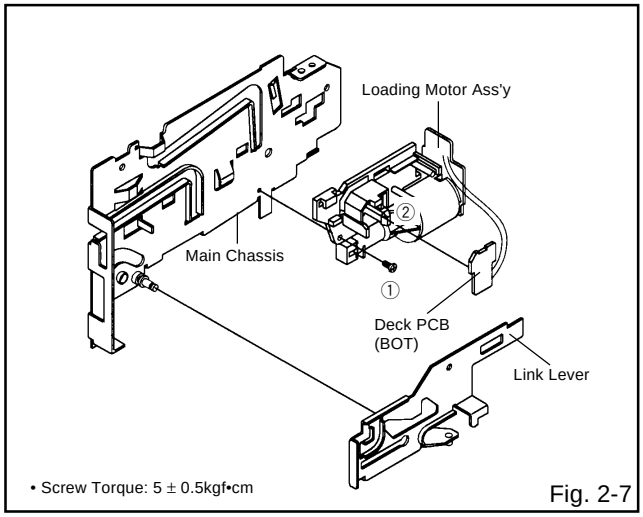


Fig. 2-7

2-8: SENSOR COVER L3 (Refer to Fig. 2-8)

1. Unlock the support ① and remove the Sensor Cover L3.

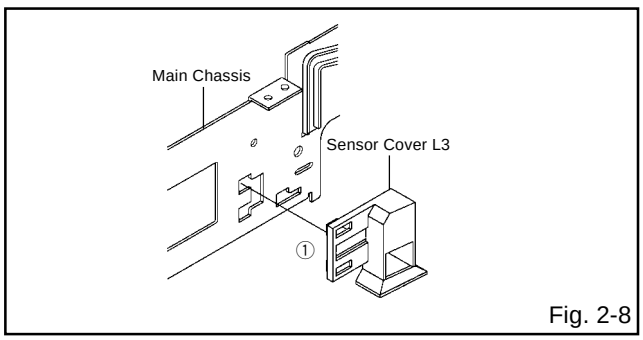


Fig. 2-8

2-9: TENSION ASS'Y (Refer to Fig. 2-9-B)

1. Turn the Middle Gear clockwise so that the Tension Holder hook, is set to the position of Fig. 2-9-A to more the Tension Arm Ass'y.
2. Remove the Tension Spring.
3. Unlock the support ① and remove the Tension Arm Ass'y.
4. Remove the Tension Adjust.
5. Unlock the 2 supports ② and remove the Tension Band Ass'y.
6. Float the hook ③ and turn it clockwise then remove the Tension Holder.
7. Remove the SS Brake Spring.
8. Remove the SS Arm Brake.

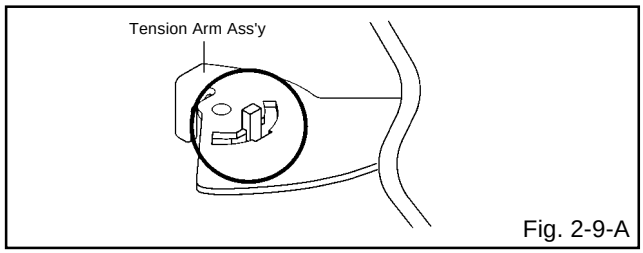


Fig. 2-9-A

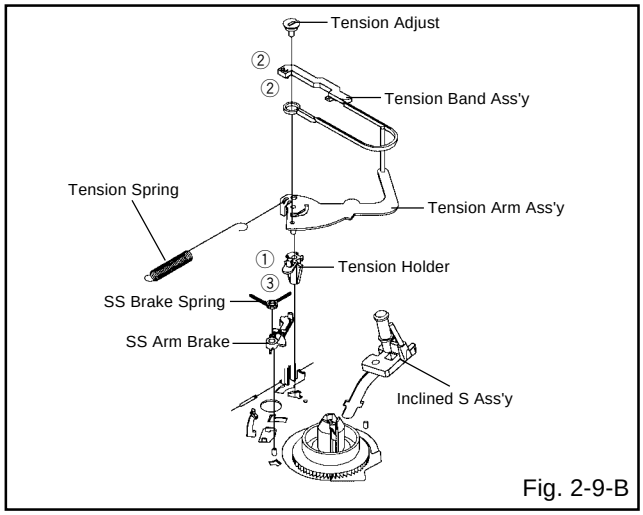


Fig. 2-9-B

NOTE

When you install the Tension Adjust, install as shown in Fig. 2-9-C. **(Refer to Fig. 2-9-C)**

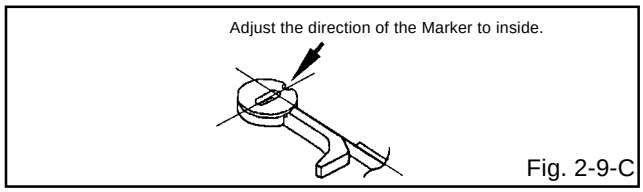


Fig. 2-9-C

DISASSEMBLY INSTRUCTIONS

2-10: T BRAKE ASS'Y (Refer to Fig. 2-10)

1. Remove the T Brake Spring.
2. Turn the T Brake Ass'y clockwise and bend the hook section to remove it.

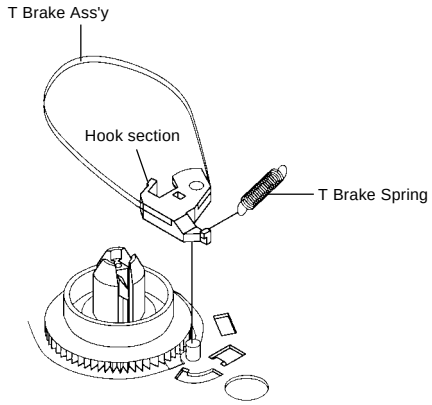


Fig. 2-10

2-11: S REEL/T REEL (Refer to Fig. 2-11)

1. Remove the S Reel and T Reel.
2. Remove the 2 Polyslider Washers ①.

NOTE

1. Take care not to damage the gears of the S Reel and T Reel.
2. The Polyslider Washer may be remained on the back of the reel.
3. Take care not to damage the shaft.
4. Do not touch the section "A" of S Reel and T Reel. (Use gloves.) **(Refer to Fig. 2-11)** Do not adhere the stains on it.
5. When you install the reel, clean the shaft and oil it. (If you do not oil, noise may be heard in FF/REW mode.)
6. After installing the reel, adjust the height of the reel. **(Refer to MECHANICAL ADJUSTMENT)**

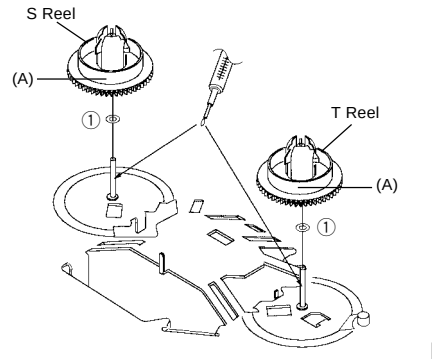


Fig. 2-11

2-12: PINCH ROLLER BLOCK/P5-3 ARM ASS'Y (Refer to Fig. 2-12-A)

1. Remove the P5 Spring.
2. Remove the screw ①.
3. Unlock the 2 supports ② and remove the Cassette Opener.
4. Remove the Pinch Roller Block, Pinch Roller Arm Spring, Pinch Roller Lever Ass'y and P5-3 Arm Ass'y.

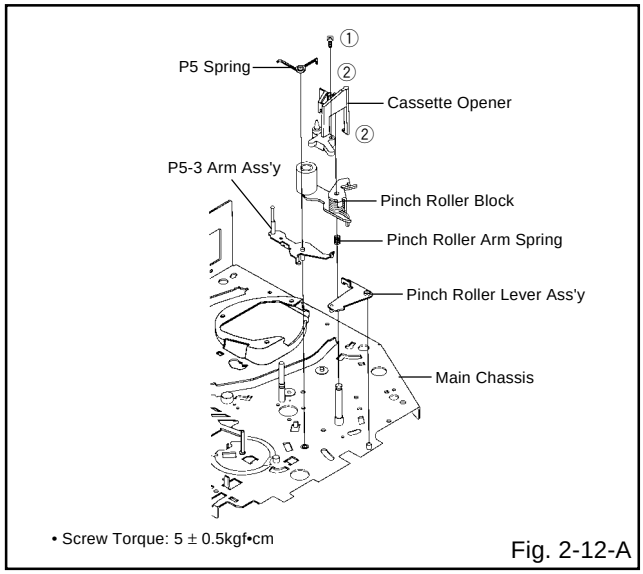


Fig. 2-12-A

NOTE

1. Do not touch the Pinch Roller. (Use gloves.)
2. When you install the Pinch Roller Block, install as shown in the circle of Fig. 2-12-B. **(Refer to Fig. 2-12-B)**

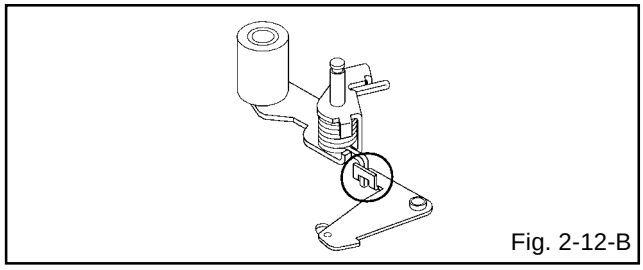


Fig. 2-12-B

2-13: A/C HEAD (Refer to Fig. 2-13-A)

1. Remove the screw ①.
2. Remove the A/C Head Base.
3. Remove the 3 screws ②.
4. Remove the A/C Head and A/C Head Spring.

NOTE

1. Do not touch the A/C Head. (Use gloves.)
2. When you install the A/C Head Spring, install as shown in Fig. 2-13-B. **(Refer to Fig. 2-13-B)**
3. When you install the A/C Head, tighten the screw (1) first, then tighten the screw (2), finally tighten the screw (3).

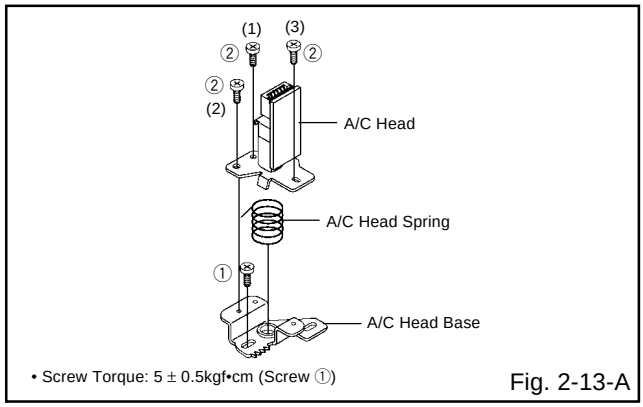


Fig. 2-13-A

DISASSEMBLY INSTRUCTIONS

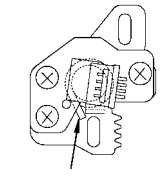
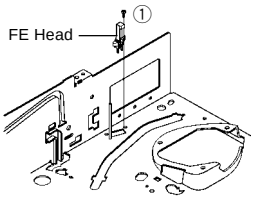


Fig. 2-13-B

2-14: FE HEAD (RECORDER ONLY) (Refer to Fig. 2-14)

1. Remove the screw ①.
2. Remove the FE Head.



• The FE Head is not installed on the Video Cassette Player.
• Screw Torque: 4 ± 0.5kgf•cm

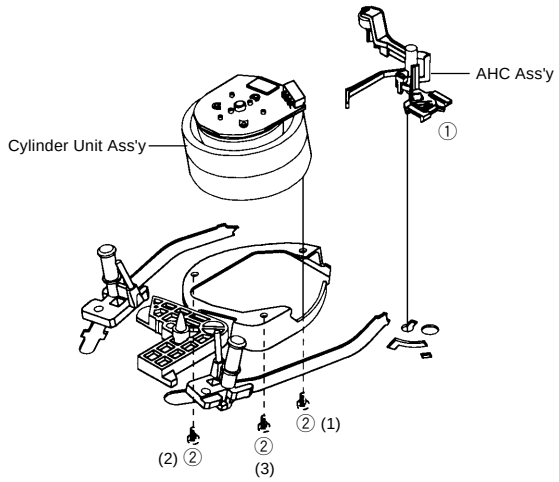
Fig. 2-14

2-15: AHC ASS'Y/CYLINDER UNIT ASS'Y (Refer to Fig. 2-15)

1. Unlock the support ① and remove the AHC Ass'y.
2. Remove the 3 screws ②.
3. Remove the Cylinder Unit Ass'y.

NOTE

When you install the Cylinder Unit Ass'y, tighten the screws from (1) to (3) in order while pulling the Ass'y toward the left front direction.

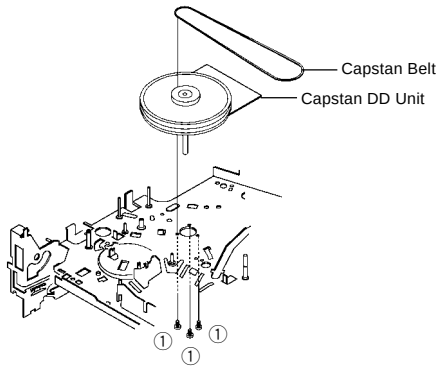


• Screw Torque: 3 ± 0.5kgf•cm

Fig. 2-15

2-16: CAPSTAN DD UNIT (Refer to Fig. 2-16)

1. Remove the Capstan Belt.
2. Remove the 3 screws ①.
3. Remove the Capstan DD Unit.



• Screw Torque: 5 ± 0.5kgf•cm

Fig. 2-16

2-17: MIDDLE GEAR/MAIN CAM (Refer to Fig. 2-17- A)

1. Remove the Polyslider Washer ①, then remove the Middle Gear.
2. Remove the E-Ring, then remove the Main Cam, P5 Cam, Pinch Roller Cam and Joint Gear.

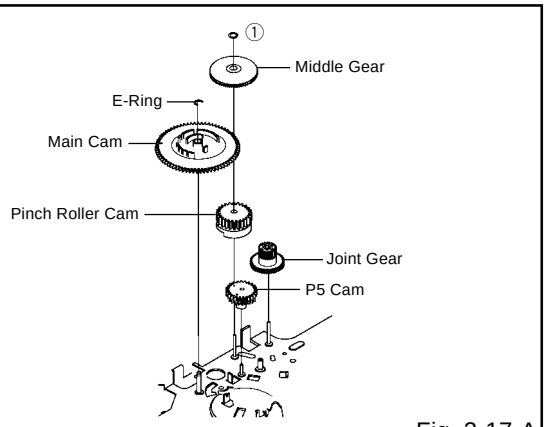


Fig. 2-17-A

NOTE

When you install the Pinch Roller Cam, P5 Cam and Main Cam, align each marker. **(Refer to Fig. 2-17- B)**

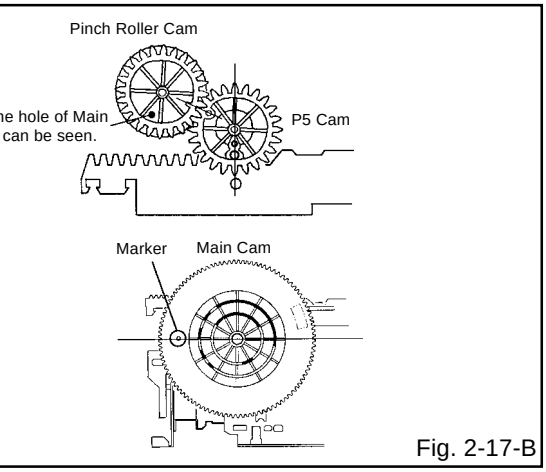


Fig. 2-17-B

DISASSEMBLY INSTRUCTIONS

2-18: CLUTCH ASS'Y (Refer to Fig. 2-18)

1. Remove the Capstan Brake Spring.
2. Remove the Polyslider Washer ①.
3. Remove the Clutch Ass'y, Ring Spring and Coupling Gear.
4. Unlock the 2 supports ② and remove the Clutch Lever.

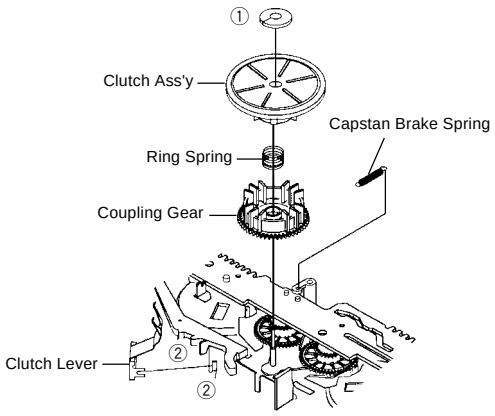


Fig. 2-18

2-19: LOADING GEAR S/T ASS'Y (Refer to Fig. 2-19-A)

1. Remove the E-Ring ① and remove the Main Loading Gear.
2. Slide the Main Rod and remove the Spring Holder.
3. Remove the Main Rod, Tension Lever, Clutch Actuator, Idler Arm Ass'y.
4. Remove the screw ②.
5. Remove the LED Reflecter.
6. Remove the Loading Arm S Ass'y and Loading Arm T Ass'y.
7. Remove the Loading Gear S and Loading Gear T.
8. Remove the Loading Gear Spring.

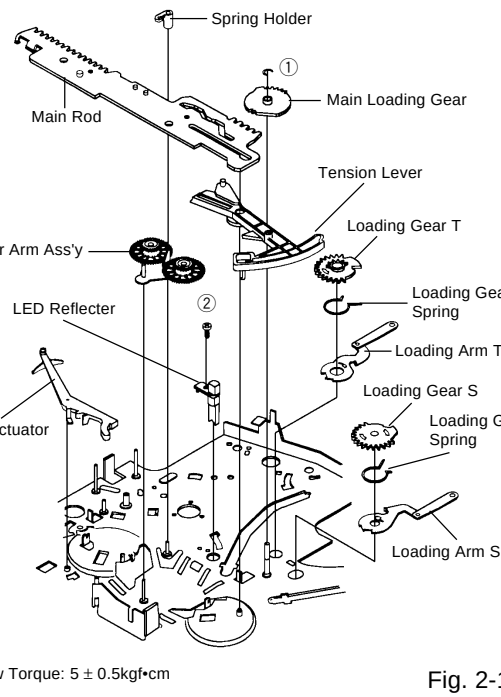


Fig. 2-19-A

NOTES

1. When you install the Loading Arm S Ass'y, Loading Arm T Ass'y and Main Loading Gear, align each marker. **(Refer to Fig. 2-19-B)**

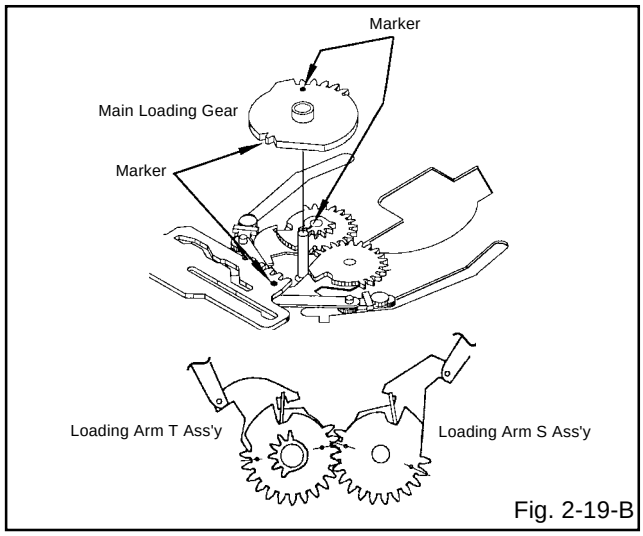


Fig. 2-19-B

2. When you install the Clutch Actuator, install as shown in the circle of Fig. 2-19-C. **(Refer to Fig. 2-19-C)**

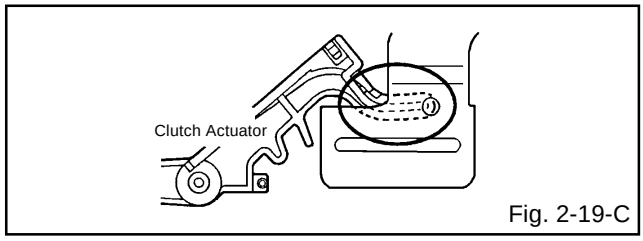


Fig. 2-19-C

2-20: INCLINED S/T ASS'Y (Refer to Fig. 2-20)

1. Remove the Cap P4.
2. Remove the screw ①.
3. Unlock the support ② and remove the Loading Gear Holder.
4. Remove the Inclined S Unit.
5. Remove the Inclined T Unit.

NOTE

Do not touch the roller of Guide Roller.

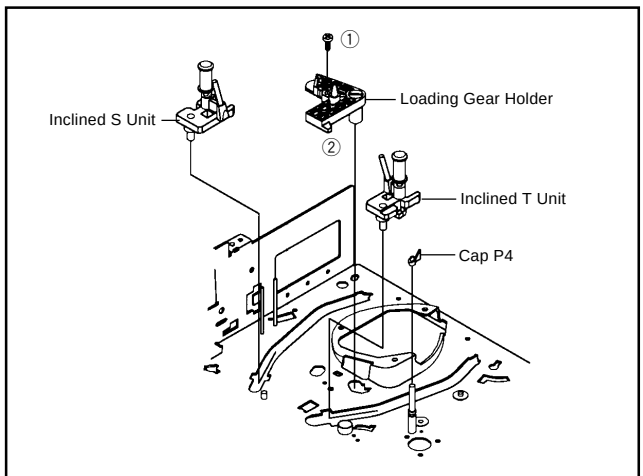


Fig. 2-20

DISASSEMBLY INSTRUCTIONS

3. REMOVAL OF ANODE CAP

Read the following **NOTED** items before starting work.

* After turning the power off there might still be a potential voltage that is very dangerous. When removing the Anode Cap, make sure to discharge the Anode Cap's potential voltage.
* Do not use pliers to loosen or tighten the Anode Cap terminal, this may cause the spring to be damaged.

REMOVAL

1. Follow the steps as follows to discharge the Anode Cap. **(Refer to Fig. 3-1.)**
   Connect one end of an Alligator Clip to the metal part of a flat-blade screwdriver and the other end to ground.
   While holding the plastic part of the insulated Screwdriver, touch the support of the Anode with the tip of the Screwdriver.
   A cracking noise will be heard as the voltage is discharged.

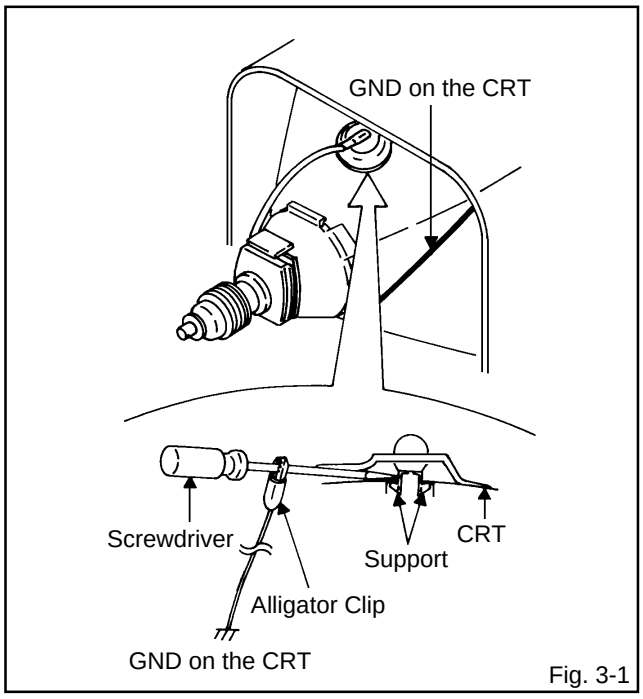


Fig. 3-1

2. Flip up the sides of the Rubber Cap in the direction of the arrow and remove one side of the support. **(Refer to Fig. 3-2.)**

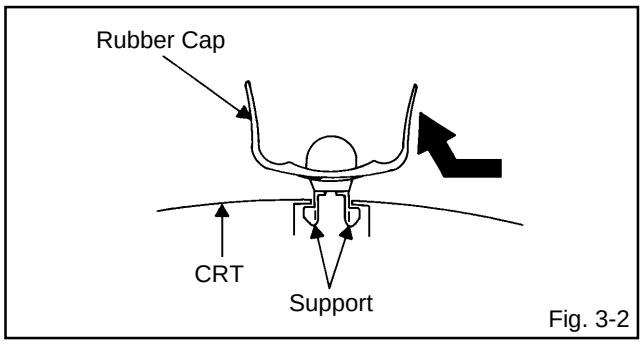


Fig. 3-2

3. After one side is removed, pull in the opposite direction to remove the other.

NOTE

Take care not to damage the Rubber Cap.

INSTALLATION

1. Clean the spot where the cap was located with a small amount of alcohol. **(Refer to Fig. 3-3.)**

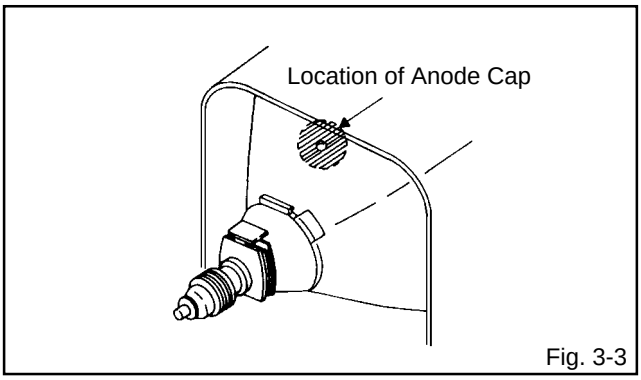


Fig. 3-3

NOTE

Confirm that there is no dirt, dust, etc. at the spot where the cap was located.

2. Arrange the wire of the Anode Cap and make sure the wire is not twisted.
3. Turn over the Rubber Cap. **(Refer to Fig. 3-4.)**

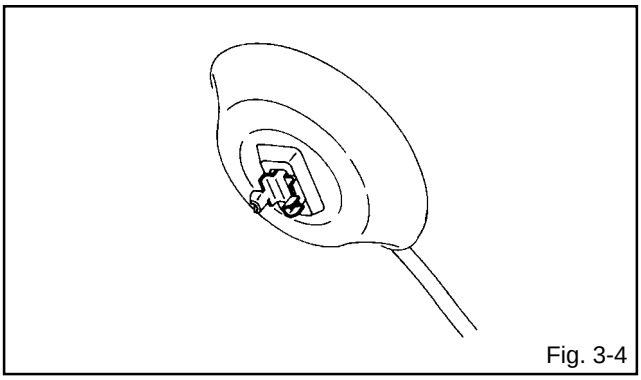


Fig. 3-4

4. Insert one end of the Anode Support into the anode button, then the other as shown in **Fig. 3-5**.

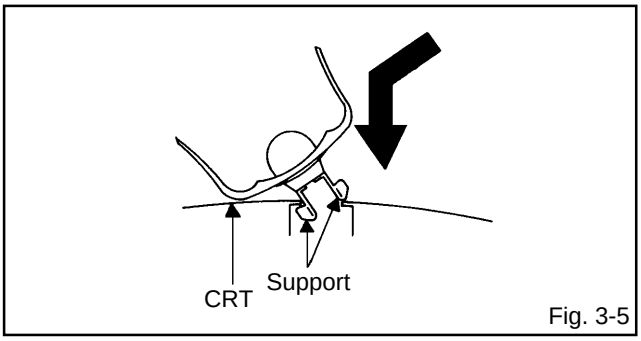


Fig. 3-5

5. Confirm that the Support is securely connected.
6. Put on the Rubber Cap without moving any parts.

KEY TO ABBREVIATIONS

A	**A/C**	:	Audio/Control
	ACC	:	Automatic Color Control
	AE	:	Audio Erase
	AFC	:	Automatic Frequency Control
	AFT	:	Automatic Fine Tuning
	AFT DET	:	Automatic Fine Tuning Detect
	AGC	:	Automatic Gain Control
	AMP	:	Amplifier
	ANT	:	Antenna
	A.PB	:	Audio Playback
	APC	:	Automatic Phase Control
	ASS'Y	:	Assembly
	AT	:	All Time
	AUTO	:	Automatic
	A/V	:	Audio/Video
B	**BGP**	:	Burst Gate Pulse
	BOT	:	Beginning of Tape
	BPF	:	Bandpass Filter
	BRAKE SOL	:	Brake Solenoid
	BUFF	:	Buffer
	B/W	:	Black and White
C	**C**	:	Capacitance, Collector
	CASE	:	Cassette
	CAP	:	Capstan
	CARR	:	Carrier
	CH	:	Channel
	CLK	:	Clock
	CLOCK (SY-SE)	:	Clock (Syscon to Servo)
	COMB	:	Combination, Comb Filter
	CONV	:	Converter
	CPM	:	Capstan Motor
	CTL	:	Control
	CYL	:	Cylinder
	CYL-M	:	Cylinder-Motor
	CYL SENS	:	Cylinder-Sensor
D	**DATA (SY-CE)**	:	Data (Syscon to Servo)
	dB	:	Decibel
	DC	:	Direct Current
	DD Unit	:	Direct Drive Motor Unit
	DEMOD	:	Demodulator
	DET	:	Detector
	DEV	:	Deviation
E	**E**	:	Emitter
	EF	:	Emitter Follower
	EMPH	:	Emphasis
	ENC	:	Encoder
	ENV	:	Envelope
	EOT	:	End of Tape
	EQ	:	Equalizer
	EXT	:	External
F	**F**	:	Fuse
	FBC	:	Feed Back Clamp
	FE	:	Full Erase
	FF	:	Fast Forward, Flipflop
	FG	:	Frequency Generator
	FL SW	:	Front Loading Switch
	FM	:	Frequency Modulation
	FSC	:	Frequency Sub Carrier
	FWD	:	Forward
G	**GEN**	:	Generator
	GND	:	Ground
H	**H.P.F**	:	High Pass Filter
	H.SW	:	Head Switch
	Hz	:	Hertz
I	**IC**	:	Integrated Circuit
	IF	:	Intermediate Frequency
	IND	:	Indicator
	INV	:	Inverter
K	**KIL**	:	Killer
L	**L**	:	Left
	LED	:	Light Emitting Diode
	LIMIT AMP	:	Limiter Amplifier
	LM, LDM	:	Loading Motor
	LP	:	Long Play
	L.P.F	:	Low Pass Filter
	LUMI.	:	Luminance
M	**M**	:	Motor
	MAX	:	Maximum
	MINI	:	Minimum
	MIX	:	Mixer, mixing
	MM	:	Monostable Multivibrator
	MOD	:	Modulator, Modulation
	MPX	:	Multiplexer, Multiplex
	MS SW	:	Mecha State Switch
N	**NC**	:	Non Connection
	NR	:	Noise Reduction
O	**OSC**	:	Oscillator
	OPE	:	Operation
P	**PB**	:	Playback
	PB CTL	:	Playback Control
	PB-C	:	Playback-Chrominance
	PB-Y	:	Playback-Luminance
	PCB	:	Printed Circuit Board
	P. CON	:	Power Control
	PD	:	Phase Detector
	PG	:	Pulse Generator
	P-P	:	Peak-to Peak
R	**R**	:	Right
	REC	:	Recording
	REC-C	:	Recording-Chrominance
	REC-Y	:	Recording-Luminance
	REEL BRK	:	Reel Brake
	REEL S	:	Reel Sensor
	REF	:	Reference
	REG	:	Regulated, Regulator
	REW	:	Rewind
	REV, RVS	:	Reverse
	RF	:	Radio Frequency
	RMC	:	Remote Control
	RY	:	Relay
S	**S. CLK**	:	Serial Clock
	S. COM	:	Sensor Common
	S. DATA	:	Serial Data
	SEG	:	Segment
	SEL	:	Select, Selector
	SENS	:	Sensor
	SER	:	Search Mode
	SI	:	Serial Input
	SIF	:	Sound Intermediate Frequency
	SO	:	Serial Output
	SOL	:	Solenoid
	SP	:	Standard Play
	STB	:	Serial Strobe
	SW	:	Switch

KEY TO ABBREVIATIONS

S	**SYNC**	:	Synchronization
	SYNC SEP	:	Sync Separator, Separation
T	**TR**	:	Transistor
	TRAC	:	Tracking
	TRICK PB	:	Trick Playback
	TP	:	Test Point
U	**UNREG**	:	Unregulated
V	**V**	:	Volt
	VCO	:	Voltage Controlled Oscillator
	VIF	:	Video Intermediate Frequency
	VP	:	Vertical Pulse, Voltage Display
	V.PB	:	Video Playback
	VR	:	Variable Resistor
	V.REC	:	Video Recording
	VSF	:	Visual Search Fast Forward
	VSR	:	Visual Search Rewind
	VSS	:	Voltage Super Source
	V-SYNC	:	Vertical-Synchronization
	VT	:	Voltage Tuning
X	**X'TAL**	:	Crystal
Y	**Y/C**	:	Luminance/Chrominance

SERVICE MODE LIST

This unit provided with the following SERVICE MODES so you can repair, examine and adjust easily.

To enter SERVICE MODE, unplug AC cord till lost actual clock time. Then press and hold Vol (-) button of main unit and remocon key simultaneously.

The both pressing of set key and remote control key will not be possible if clock has been set. To reset clock, either unplug AC cord and allow at least 5 seconds before Power On.

Set Key	Remocon Key	Operations
VOL. (-) MIN	0	Releasing of V-CHIP PASSWORD.
VOL. (-) MIN	1	Initialization of the factory. NOTE: Do not use this for the normal servicing.
VOL. (-) MIN	2	Horizontal position adjustment of OSD. NOTE: Also can be adjusted by using the Adjustment MENU. Refer to the "ELECTRICAL ADJUSTMENT" (OSD HORIZONTAL).
VOL. (-) MIN	3	Adjust the PG SHIFTER automatically. Refer to the "ELECTRICAL ADJUSTMENT" (PG SHIFTER).
VOL. (-) MIN	4	Adjust the PG SHIFTER manually. Refer to the "ELECTRICAL ADJUSTMENT" (PG SHIFTER).
VOL. (-) MIN	5	Adjusting of the Tracking to the center position. NOTE: Also can be adjusted by pressing the ATR button for more than 2 seconds during PLAY.
VOL. (-) MIN	6	POWER ON total hours and PLAY/REC total hours are displayed on the screen. Refer to the "PREVENTIVE CHECKS AND SERVICE INTERVALS" (CONFIRMATION OF USING HOURS). Can be checked of the INITIAL DATA of MEMORY IC. Refer to the "NOTE FOR THE REPLACING OF MEMORY IC".
VOL. (-) MIN	8	Writing of EEPROM initial data. NOTE: Do not use this for the normal servicing.
VOL. (-) MIN	9	Display of the Adjustment MENU on the screen. Refer to the "ELECTRICAL ADJUSTMENT" (On-Screen Display Adjustment).

Method	Operations
Press the ATR button on the remote control for more than 2 seconds during PLAY.	Adjusting of the Tracking to the center position. Refer to the "MECHANICAL ADJUSTMENT" (GUIDE ROLLER) and "ELECTRICAL ADJUSTMENT" (PG SHIFTER).
Make the short circuit between the test point of SERVICE and the GND.	The EOT/BOT/Reel sensor do not work at this moment. Refer to the "PREPARATION FOR SERVICING"

PREVENTIVE CHECKS AND SERVICE INTERVALS

The following standard table depends on environmental conditions and usage. Unless maintenance is properly carried out, the following service intervals may be quite shortened as harmful effects may be had on other parts. Also, long term storage or misuse may cause transformation and aging of rubber parts.

Time / Parts Name	500 hours	1,000 hours	1,500 hours	2,000 hours	3,000 hours	Notes
Audio Control Head	■	■	■	■	■	Clean those parts in contact with the tape.
Full Erase Head (Recorder only)	■	■	■	■	■	
Capstan Belt			■	■	●	Clean the rubber, and parts which the rubber touches.
Pinch Roller	■	■	■	■	■ ●	
Capstan DD Unit					●	
Loading Motor					●	
Tension Band					●	
Capstan Shaft	■	■	■	■	■	
Tape Running Guide Post	■	■	■	■	■	Replace when rolling becomes abnormal.
Cylinder Unit	■	■	■	■	●	Clean the Head

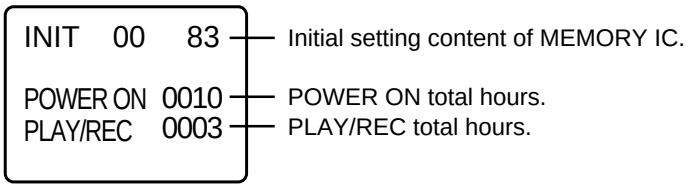
■ : Clean
● : Replace

CONFIRMATION OF USING HOURS

POWER ON total hours and PLAY/REC total hours can be checked on the screen.
Total hours are displayed in 16 system of notation.

NOTE: The confirmation of using hours will not be possible if clock has been set. To reset clock, either unplug AC cord and allow at least 5 seconds before Power On.

1. Set the VOLUME to minimum.
2. While holding down VOLUME button on front cabinet, press key 6 on remote control simultaneously.
3. After the confirmation of using hours, turn off the power.



(16 x 16 x 16 x thousands digit value) + (16 x 16 x hundreds digit value) + (16 x tens digit value) + (ones digit value)

PREVENTIVE CHECKS AND SERVICE INTERVALS

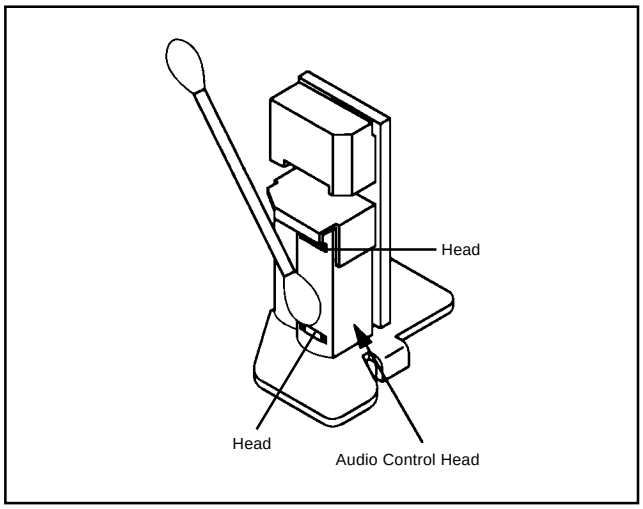
CLEANING

NOTE

After cleaning the heads with isopropyl alcohol, do not run a tape until the heads dry completely. If the heads are not completely dry and alcohol gets on the tape, damage may occur.

1. AUDIO CONTROL HEAD

Clean the Audio Control Head with the cotton stick soaked by alcohol. Clean the full erase head in the same manner. **(Refer to the figure below.)**



2. TAPE RUNNING SYSTEM

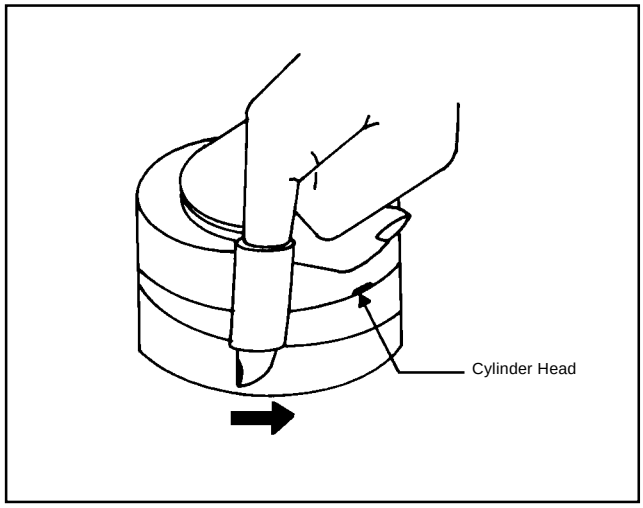
When cleaning the tape transport system, use the gauze moistened with isopropyl alcohol.

3. CYLINDER

Wrap a piece of chamois around your finger. Dip it in isopropyl alcohol. Hold it to the cylinder head softly. Turn the cylinder head counterclockwise to clean it (in the direction of the arrow). **(Refer to the figure below.)**

NOTE

Do not exert force against the cylinder head. Do not move the chamois upward or downward on the head.
Use the chamois one by one.



NOTE FOR THE REPLACING OF MEMORY IC

If a service repair is undertaken where it has been required to change the MEMORY IC, the following steps should be taken to ensure correct data settings while making reference to TABLE 1.

NOTE: Initial Data setting will not be possible if clock has been set. To reset clock, either unplug AC cord and allow at least 5 seconds before Power On.

INI	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F
00	88	1B	E2	63	43	14	34	09	51	39	18	92	19	4E	26	15
10	B2	9A	92	93	00	00	30	05	08	00	A9	54	04	3E	06	04
20	06	29	01	15	10	60	32	3A	BA	B6	10	15	20	25	27	29
30	2B	2C	2F	32	35	38	3B	3E	41	44	45	46	47	48	49	4A
40	4B	4C	4D	4E	4F	50	51	52	53	54	55	56	57	58	58	59
50	59	5A	5A	5B	5B	5C	5D	5E	5F	60	61	62	63	64	65	66
60	67	69	6C	6E	71	74	79	7C	7E	7F	---	---	---	---	---	---

Table 1

1. Enter DATA SET mode by setting VOLUME to minimum.
2. While holding down VOLUME button on front cabinet, press key 6 on remote control simultaneously. ADDRESS and DATA should appear as FIG 1.

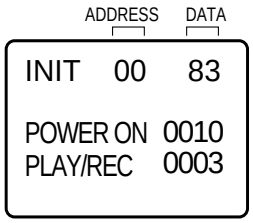
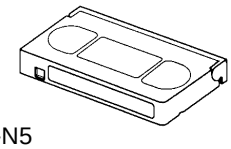
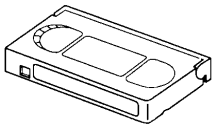
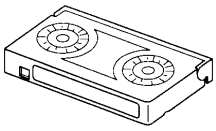
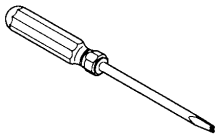
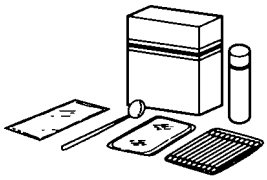
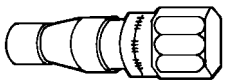
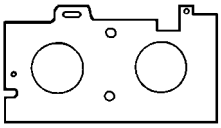
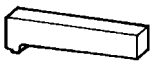
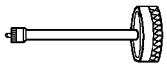
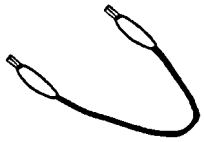
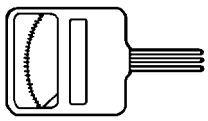


Fig. 1

3. ADDRESS is now selected and should "blink". Using the SET + or - keys on the remote, step through the ADDRESS until required ADDRESS to be changed is reached.
4. Press ENTER to select DATA. When DATA is selected, it will "blink".
5. Again, step through the DATA using SET + or - until required DATA value has been selected.
6. Pressing ENTER will take you back to ADDRESS for further selection if necessary.
7. Repeat steps 3 to 6 until all data has been checked.
8. When satisfied correct DATA has been entered, turn POWER off (return to STANDBY MODE) to finish DATA input.

The unit will now have the correct DATA for the new MEMORY IC.

SERVICING FIXTURES AND TOOLS

Alignment Tape  ST-N5 ST-NF	Back tension cassette gauge  70909103	Torque cassette gauge (KT-300NR)  70909199	Taper nut driver  70909228
VTR cleaning kit 	VTR lubrication kit 	Grease 	JG002B Adapter JG002E Dial Torque Gauge (10~90gf•cm) JG002F (60~600gf•cm) 
JG022 Master Plane 	JG024A Reel Disk Height Adjustment Jig 	JG153 X Value Adjustment Screwdriver 	JG154 Cable 
Tentelometer 			

Ref. No.	Part No.	Parts Name	Remarks
JG002B	APJG002B00	Adapter	VSR Torque, Brake Torque (S Reel/T Reel Ass'y)
JG002E	APJG002E00	Dial Torque Gauge (10~90gf•cm)	Brake Torque (T Reel Ass'y)
JG002F	APJG002F00	Dial Torque Gauge (60~600gf•cm)	VSR Torque, Brake Torque (S Reel)
JG022	APJG022000	Master Plane	Reel Disk Height Adjustment
JG024A	APJG024A00	Reel Disk Height Adjustment Jig	Reel Disk Height Adjustment
JG153	APJG153000	X Value Adjustment Screwdriver	X Value Adjustment
JG154	APJG154000	Cable	Used to connect the test point of SERVICE and GROUND

PREPARATION FOR SERVICING

How to use the Servicing Fixture

1. Unplug the connector CP353 and CP354, then remove the TV/VCR Block from the set.
2. Remove the Operation PCB from the set, then connect it with the Syscon PCB.
   If necessary, connect CP353. (Front A/V Jack Input Terminal)
3. Short circuit between **TP1001** and **Ground** with the cable JG154.
   (Refer to MAJOR COMPONENTS LOCATION GUIDE)
4. The EOT, BOT and Reel Sensor do not work at this moment.
   At that time, the STOP/EJECT button is available to insert and eject the Cassette Tape.

MECHANICAL ADJUSTMENTS

1. CONFIRMATION AND ADJUSTMENT

Read the following NOTES before starting work.

- Place an object which weighs between 450g~500g on the Cassette Tape to keep it steady when you want to make the tape run without the Cassette Holder. (Do not place an object which weighs over 500g.)
- When you activate the deck without the Cassette Holder, short circuit between **TP1001** and **GND**. **(Refer to ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE)** In this condition the BOT/EOT/Reel Sensor will not function.

1-1: CONFIRMATION AND ADJUSTMENT OF REEL DISK HEIGHT

1. Turn on the power and set to the STOP mode.
2. Set the master plane **(JG022)** and reel disk height adjustment jig **(JG024A)** on the mechanism framework, taking care not to scratch the drum, as shown in **Fig. 1-1-A**.
3. While turning the reel and confirm the following points. Check if the surface "A" of reel disk is lower than the surface "B" of reel disk height adjustment jig **(JG024A)** and is higher than the surface "C". If it is not passed, place the height adjustment washers and adjust to 10(+2, -0)mm.
4. Adjust the other reel in the same way.

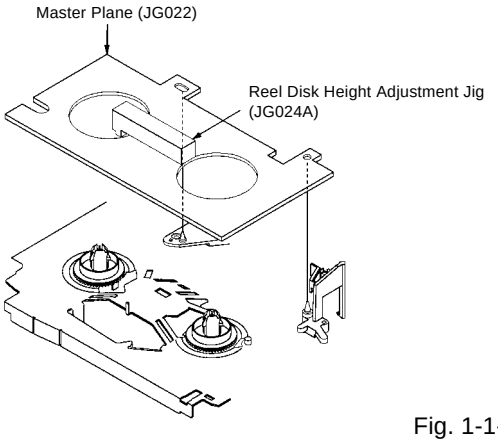


Fig. 1-1-A

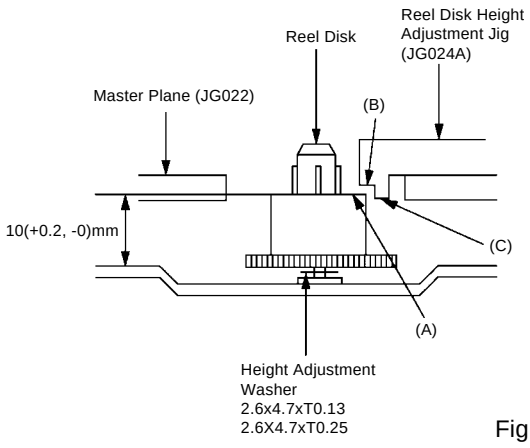


Fig. 1-1-B

1-2: CONFIRMATION AND ADJUSTMENT OF TENSION POST POSITION

1. Set to the PLAY mode.
2. Adjust the Tension Adjust until the edge of the Tension Arm is positioning within 0.5mm range from the standard line center of Main Chassis.
   After this adjustment, confirm that the cut position is located in "A" area as shown in **Fig. 1-2-B**. If it is located in "B" area, adjust again.
3. While turning the S Reel clockwise, confirm that the edge of the Tension Arm is located in the position described above.

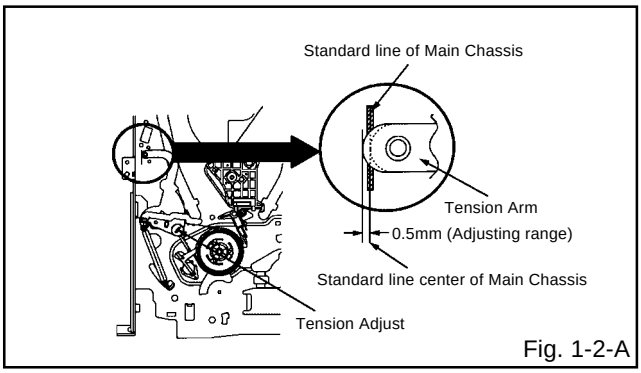


Fig. 1-2-A

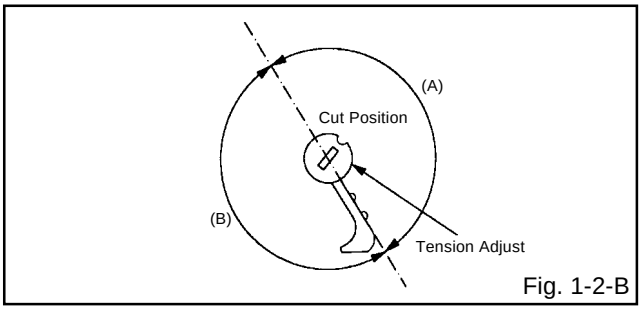


Fig. 1-2-B

1-3: CONFIRMATION OF PLAYBACK TORQUE AND BACK TENSION TORQUE DURING PLAYBACK

1. Load a video tape (T-120) recorded in standard speed mode. Set the unit to the PLAY mode.
2. Install the tentelometer as shown in **Fig. 1-3**. Confirm that the meter indicates 20 ± 2gf in the beginning of playback.

• USING A CASSETTE TYPE TORQUE TAPE **(KT-300NR)**

1. After confirmation and adjustment of Tension Post position **(Refer to item 1-2)**, load the cassette type torque tape **(KT-300NR)** and set to the PLAY mode.
2. Confirm that the right meter of the torque tape indicates 60~110gf•cm during playback in SP mode.
3. Confirm that the left meter of the torque tape indicates 25~40gf•cm during playback in SP mode.

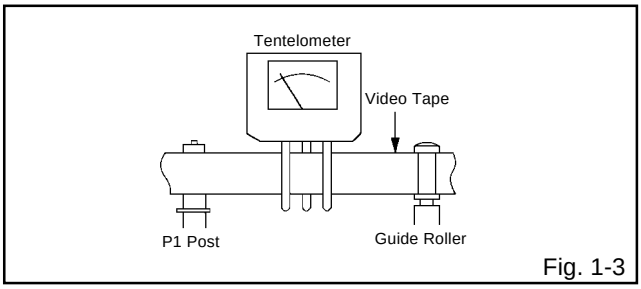


Fig. 1-3

MECHANICAL ADJUSTMENTS

1-4: CONFIRMATION OF VSR TORQUE

1. Install the Torque Gauge **(JG002F)** and Adapter **(JG002B)** on the S Reel. Set to the Picture Search (Rewind) mode. **(Refer to Fig.1-4)**
2. Then, confirm that it indicates 120~180gf•cm.

NOTE

Install the Torque Gauge on the reel disk firmly. Press the REW button to turn the reel disk.

1-5: CONFIRMATION OF REEL BRAKE TORQUE

(S Reel Brake) **(Refer to Fig. 1-4-B)**

1. Once set to the Fast Forward mode then set to the Stop mode. While, unplug the AC cord when the Pinch Roller Block is on the position of **Fig. 1-4-A**.
2. Move the Idler Ass'y from the S Reel.
3. Install the Torque Gauge **(JG002F)** and Adapter **(JG002B)** on the S Reel. Turn the Torque Gauge **(JG002F)** clockwise.
4. Then, confirm that it indicates 60~100gf•cm.

(T Reel Brake) **(Refer to Fig. 1-4-B)**

1. Once set to the Fast Forward mode then set to the Stop mode. While, unplug the AC cord when the Pinch Roller Block is on the position of **Fig. 1-4-A**.
2. Move the Idler Ass'y from the T Reel.
3. Install the Torque Gauge **(JG002E)** and Adapter **(JG002B)** on the T reel. Turn the Torque Gauge **(JG002E)** counterclockwise.
4. Then, confirm that it indicates 45~70gf•cm.

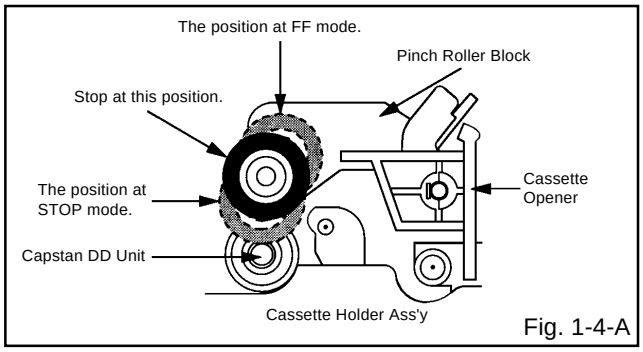


Fig. 1-4-A

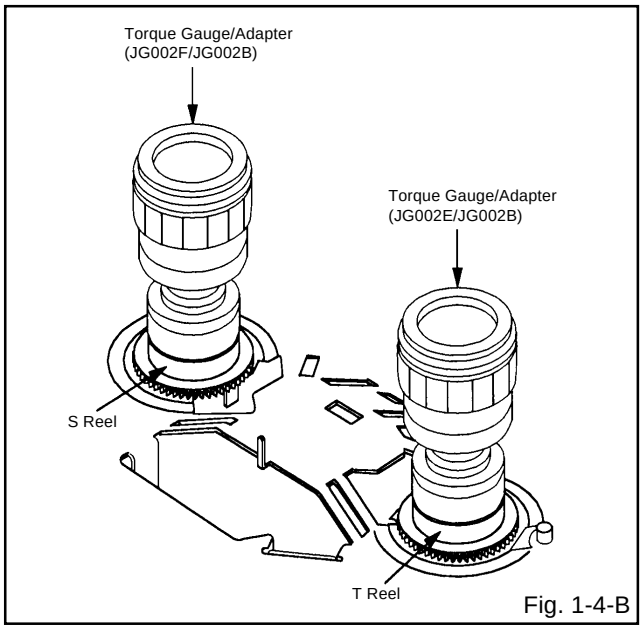


Fig. 1-4-B

NOTE

If the torque is out of the range, replace the following parts.

Check item	Replacement Part
1-4	Idler Ass'y/Clutch Ass'y
1-5	S Reel side: S Reel/Tension Band Ass'y/ Tension Arm Ass'y T Reel side: T Reel/T Brake Spring/T Brake Ass'y

2. CONFIRMATION AND ADJUSTMENT OF TAPE RUNNING MECHANISM

Tape Running Mechanism is adjusted precisely at the factory. Adjustment is not necessary as usual. When you replace the parts of the tape running mechanism because of long term usage or failure, the confirmation and adjustment are necessary.

2-1: GUIDE ROLLER

1. Playback the VHS Alignment Tape.
2. Connect CH-1 of the oscilloscope to **TP4001 (Envelope)** and CH-2 to **TP1002 (SW Pulse)**.
3. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
4. Trigger with SW Pulse and observe the envelope. **(Refer to Fig. 2-1-A)**
5. When observing the envelope, adjust the Taper Nut Driver slightly until the envelope will be flat. Even if you press the Tracking Button, adjust so that flatness is not moved so much.
6. Adjust so that the A : B ratio is better than 3 : 2 as shown in **Fig. 2-1-B**, even if you press the Tracking Button to move the envelope (The envelope waveform will begin to decrease when you press the Tracking Button).
7. Adjust the PG shifter during playback. **(Refer to the ELECTRICAL ADJUSTMENTS)**

NOTE

After adjustment, confirm and adjust A/C head. **(Refer to item 2-2)**

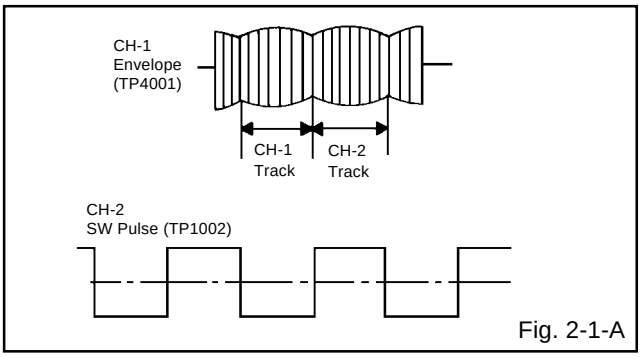


Fig. 2-1-A

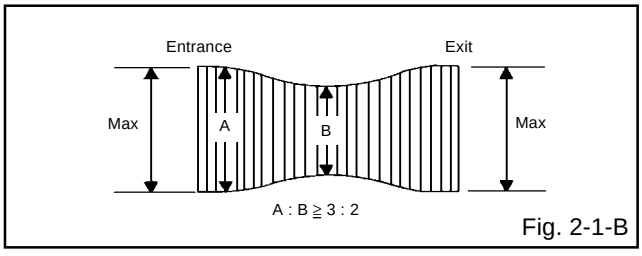


Fig. 2-1-B

MECHANICAL ADJUSTMENTS

2-2: CONFIRMATION AND ADJUSTMENT AUDIO/ CONTROL HEAD

When the Tape Running Mechanism does not work well, adjust the following items.

1. Playback the VHS Alignment Tape.
2. Confirm that the reflected picture of stamp mark is appeared on the tape prior to P4 Post as shown in **Fig. 2-2-A**.
   a) When the reflected picture is distorted, turn the screw ① clockwise until the distortion is disappeared.
   b) When the reflected picture is not distorted, turn the screw ① counterclockwise until little distortion is appeared, then adjust the a).
3. Turn the screw ② to set the audio level to maximum.
4. Confirm that the bottom of the Audio/ Control Head and the bottom of the tape is shown in **Fig. 2-2-C**.
   c) When the height is not correct, turn the screw ③ to adjust the height. Then, adjust the 1~3 again.

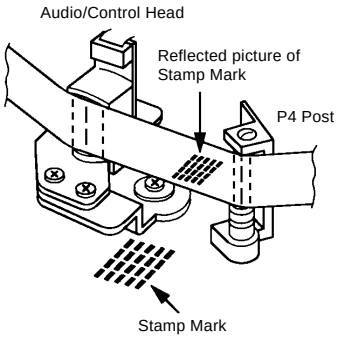


Fig. 2-2-A

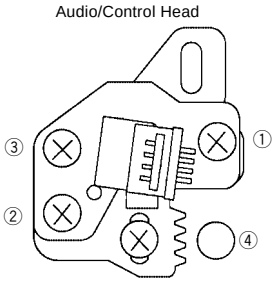


Fig. 2-2-B

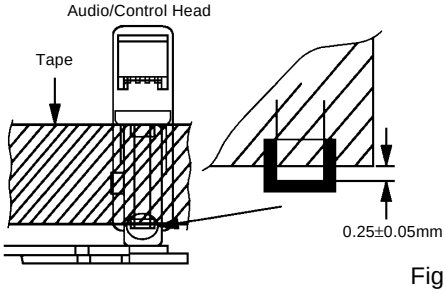


Fig. 2-2-C

2-3: TAPE RUNNIADJUSTMENT (X VALUE ADJUSTMENT)

1. Confirm and adjust the height of the Reel Disk. **(Refer to item 1-1)**
2. Confirm and adjust the position of the Tension Post. **(Refer to item 1-2)**
3. Adjust the Guide Roller. **(Refer to item 2-1)**
4. Confirm and adjust the Audio/Control Head. **(Refer to item 2-2)**
5. Connect CH-1 of the oscilloscope to **TP4001**, CH-2 to **TP1002** and CH-3 to **HOT side of Audio Out Jack**.
6. Playback the VHS Alignment Tape.
7. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
8. Set the X Value adjustment driver **(JG153)** to the ④ of **Fig. 2-2-B**. Adjust X value so that the envelope waveform output becomes maximum. Check if the relation between Audio and Envelope waveform becomes (1) or (2) of **Fig. 2-3**.

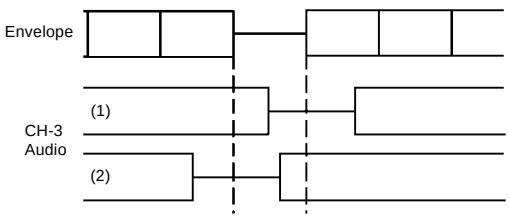
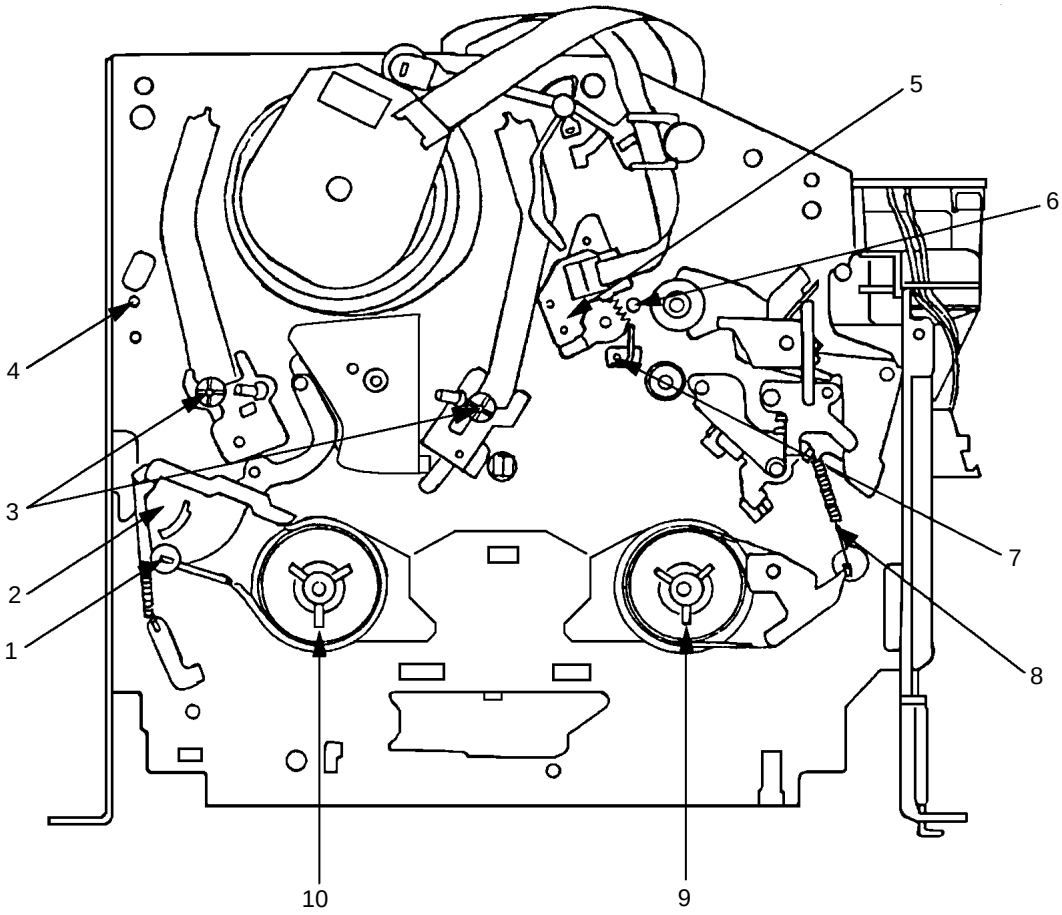


Fig. 2-3

MECHANICAL ADJUSTMENTS

3. MECHANISM ADJUSTMENT PARTS LOCATION GUIDE



1. Tension Adjust
2. Tension Arm
3. Guide Roller
4. P1 Post
5. Audio/Control Head
6. X value adjustment driver hole
7. P4 Post
8. T Brake Spring
9. T Reel
10. S Reel

ELECTRICAL ADJUSTMENTS

1. BEFORE MAKING ELECTRICAL ADJUSTMENTS

Read and perform these adjustments when repairing the circuits or replacing electrical parts or PCB assemblies.

CAUTION

- Use an isolation transformer when performing any service on this chassis.
- Before removing the anode cap, discharge electricity because it contains high voltage.
- When removing a PCB or related component, after unfastening or changing a wire, be sure to put the wire back in its original position.
  Inferior silicon grease can damage IC's and transistors.
- When replacing IC's and transistors, use only specified silicon grease.
  Remove all old silicon before applying new silicon.

On-Screen Display Adjustment

1. Unplug the AC plug for more than 5 seconds to set the clock to the non-setting state. Then, set the volume level to minimum.
2. Press the VOL. DOWN button on the set and the Channel button **(9)** on the remote control simultaneously to appear the adjustment mode on the screen as shown in **Fig. 1-1**.

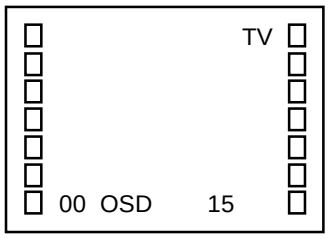


Fig. 1-1

3. Use the Channel UP/DOWN button or Channel button **(0-9)** on the remote control to select the options shown in **Fig. 1-2**.
4. Press the MENU button on the remote control to end the adjustments.

NO.	FUNCTION	NO.	FUNCTION
00	OSD H	13	BRIGHTNESS
01	CUT OFF	14	CONTRAST
02	RF DELAY	15	COLOR
03	VIF VCO	16	TINT
04	H VCO	17	SHARPNESS
05	H PHASE	18	FM LEVEL
06	V SIZE	19	LEVEL
07	V SHIFT	20	SEPARATION 1
08	R DRIVE	21	SEPARATION 2
09	B DRIVE	22	TEST MONO
10	R BIAS	23	TEST STEREO
11	G BIAS	24	X-RAY TEST
12	B BIAS		

Fig. 1-2

2. BASIC ADJUSTMENTS (VCR SECTION)

2-1: PG SHIFTER

1. Connect CH-1 on the oscilloscope to **TP1002** and CH-2 to **pin 4 of CP1003**.
2. Playback the alignment tape.
3. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
4. Press the VOL. DOWN button on the set and the channel button **(3)** on the remote control simultaneously until the indicator REC disappears. If the indicator REC disappears, adjustment is completed.

(If the above adjustments doesn't work well:)

5. Press the VOL. DOWN button on the set and the channel button **(3)** on the remote control simultaneously until the indicator REC disappears.
6. When the REC indicator is blinking, press both VOL. DOWN button on the set and the channel button **(4)** on the remote control simultaneously and adjust the Tracking +/- button until the arising to the down of Head Switching Pulse becomes 6.5 ± 0.5H.
   (Refer to Fig. 2-1-A, B)
7. Press the Tracking Auto button.

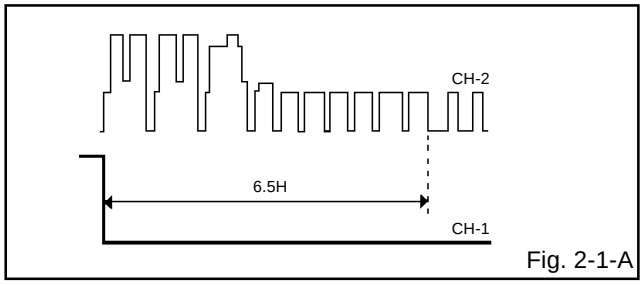


Fig. 2-1-A

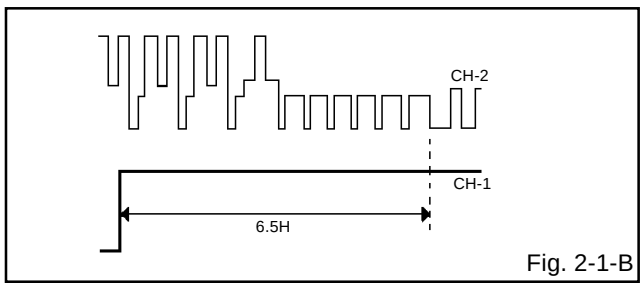


Fig. 2-1-B

2-2: VCO FREERUN

1. Place the set with Aging Test for more than 10 minutes.
2. Receive the VHF HIGH.
3. Disconnect the Antenna while receiving the VHF HIGH and set to the Noise screen.
4. Once turn off the Power and turn on the Power again.
5. Approxi. 3 seconds later, input the Antenna again.
6. Connect the digital voltmeter between the **pin 5 of CP351** and the **pin 1 (GND) of CP351**.
7. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(03)** on the remote control to select "VIF VCO".
8. Press the VOL. UP/DOWN button on the remote control until the digital voltmeter is DC2.5V.
9. After the 2.5V adjustment, countdown the VIF VCO step No. by 1 step with the VOL. DOWN button.

ELECTRICAL ADJUSTMENTS

2-3: RF AGC

1. Receive the VHF HIGH (63dB).
2. Connect the digital voltmeter between the **pin 5 of CP351** and the **pin 1 (GND) of CP351**.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(02)** on the remote control to select "RF DELAY".
4. Press the VOL. UP/DOWN button on the remote control until the digital voltmeter is 2.9V.

(TV SECTION)

2-4: CONSTANT VOLTAGE

1. Connect the digital voltmeter to the **TP601**.
2. Set condition is AV MODE without signal.
3. Using the remote control, set the brightness and contrast to normal position.
4. Adjust the **VR502** until the digital voltmeter is 135 ± 0.5V.

2-5: CUT OFF

1. Adjust the unit to the following settings.
   R BIAS=128, G BIAS=128, B BIAS=128,
   BRIGHTNESS=128, CONTRAST=100
2. Place the set with Aging Test for more than 15 minutes.
3. Set condition is AV MODE without signal.
4. Using the remote control, set the brightness and contrast to normal position.
5. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(01)** on the remote control to select "CUT OFF".
6. Adjust the **Screen Volume** until a dim raster is obtained.

2-6: WHITE BALANCE

NOTE: Adjust after performing CUT OFF adjustment.

1. Place the set with Aging Test for more than 15 minutes.
2. Receive the color bar pattern.
3. Using the remote control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(10)** on the remote control to select "R.BIAS".
5. Using the VOL. UP/DOWN button on the remote control, adjust the R.BIAS.
6. Press the CH. UP/DOWN button on the remote control to select the "R.DRIVE", "B.DRIVE", "G.BIAS" or "B.BIAS".
7. Using the VOL. UP/DOWN button on the remote control, adjust the R.DRIVE, B.DRIVE, G.BIAS or B.BIAS.
8. Perform the above adjustments 6 and 7 until the white color is looked like a white.

2-7: FOCUS

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Turn the Focus Volume fully counterclockwise once.
4. Adjust the **Focus Volume** until picture is distinct.

2-8: HORIZONTAL PHASE

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(05)** on the remote control to select "H PHASE".
4. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on right and left becomes minimum.

2-9: VERTICAL SHIFT

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(07)** on the remote control to select "V SHIFT".
4. Press the VOL. UP/DOWN button on the remote control until the horizontal line becomes fit to the notch of the shadow mask.

2-10: VERTICAL SIZE

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(06)** on the remote control to select "V SIZE".
4. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on upside and downside becomes minimum.

2-11: SUB BRIGHTNESS

1. Receive the monoscope pattern. (RF Input)
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(13)** on the remote control to select "BRIGHTNESS".
4. Press the VOL. UP/DOWN button on the remote control until the white 10% is starting to be visible
5. Receive the monoscope pattern. (Audio Video Input)
6. Press the INPUT SELECT button on the remote control to set to the AV mode. Then perform the above adjustments 2~4.

2-12: SUB CONTRAST

1. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(14)** on the remote control to select "CONTRAST".
2. Press the VOL. UP/DOWN button on the remote control until the contrast step No. becomes "100"
3. Press the INPUT SELECT button on the remote control to set to the AV mode.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(14)** on the remote control to select "CONTRAST".
5. Press the VOL. UP/DOWN button on the remote control until the contrast step No. becomes "100"

ELECTRICAL ADJUSTMENTS

2-13: SUB TINT

1. Receive the color bar pattern. (RF Input)
2. Connect the oscilloscope to **TP801**.
3. Using the remote control, set the brightness, contrast, color and tint to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(16)** on the remote control to select "TINT".
5. Press the VOL. UP/DOWN button on the remote control until the section "A" becomes a straight line. **(Refer to Fig. 2-2)**
6. Receive the color bar pattern. (Audio Video Input)
7. Press the INPUT SELECT button on the remote control to set to the AV mode. Then perform the above adjustments 2~5.

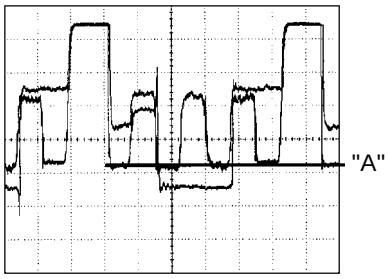


Fig. 2-2

2-14: SUB COLOR

1. Receive the color bar pattern. (RF Input)
2. Connect the oscilloscope to **TP803**.
3. Using the remote control, set the brightness, contrast, color and tint to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(15)** on the remote control to select "COLOR".
5. Adjust the VOLTS RANGE VARIABLE knob of the oscilloscope until the range between white 100% and 0% is set to 4 scales on the screen of the oscilloscope.
6. Press the VOL. UP/DOWN button on the remote control until the red color level is adjusted to 120 ± 5% of the white level. **(Refer to Fig. 2-3)**
7. Receive the color bar pattern. (Audio Video Input)
8. Press the INPUT SELECT button on the remote control to set to the AV mode. Then perform the above adjustments 2~6.

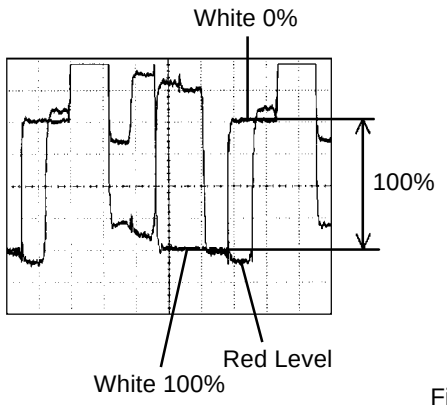


Fig. 2-3

2-15: OSD HORIZONTAL

1. Activate the adjustment mode display of **Fig. 1-1**.
2. Press the VOL. UP/DOWN button on the remote control until the difference of A and B becomes minimum. **(Refer to Fig. 2-4)**

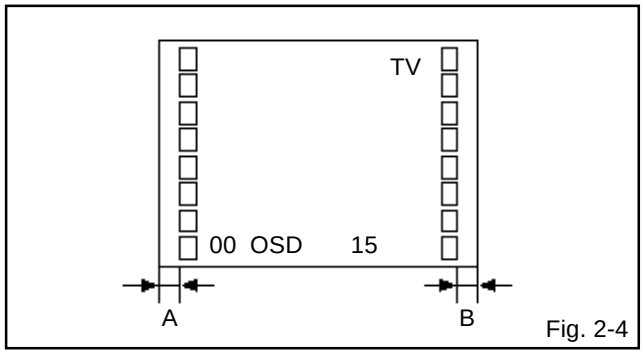
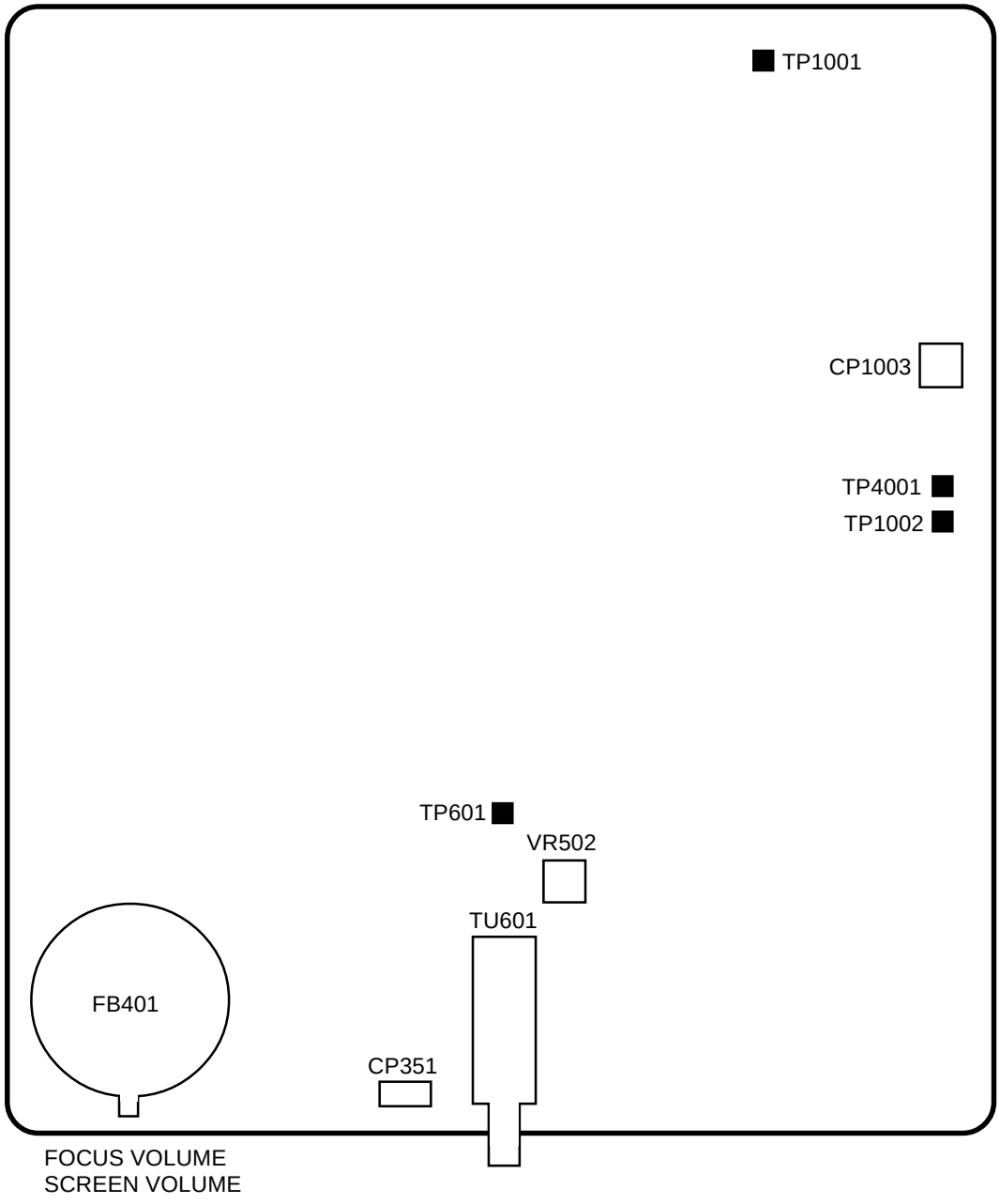


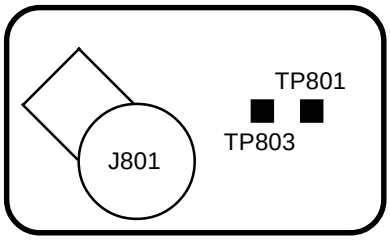
Fig. 2-4

ELECTRICAL ADJUSTMENTS

3. ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE



SYSCON



CRT

ELECTRICAL ADJUSTMENTS

4. PURITY AND CONVERGENCE ADJUSTMENTS

NOTE

1. Turn the unit on and let it warm up for at least 30 minutes before performing the following adjustments.
2. Place the CRT surface facing east or west to reduce the terrestrial magnetism.
3. Turn ON the unit and demagnetize with a Degauss Coil.

4-1: STATIC CONVERGENCE (ROUGH ADJUSTMENT)

1. Tighten the screw for the magnet. Refer to the adjusted CRT for the position. **(Refer to Fig. 4-1)**
   If the deflection yoke and magnet are in one body, untighten the screw for the body.
2. Receive the green raster pattern from the color bar generator.
3. Slide the deflection yoke until it touches the funnel side of the CRT.
4. Adjust center of screen to green, with red and blue on the sides, using the pair of purity magnets.
5. Switch the color bar generator from the green raster pattern to the crosshatch pattern.
6. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
7. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.
8. Adjust the crosshatch pattern to change to white by repeating steps 6 and 7.

4-2: PURITY

NOTE

Adjust after performing adjustments in section 4-1.

1. Receive the green raster pattern from color bar generator.
2. Adjust the pair of purity magnets to center the color on the screen.
   Adjust the pair of purity magnets so the color at the ends are equally wide.
3. Move the deflection yoke backward (to neck side) slowly, and stop it at the position when the whole screen is green.
4. Confirm red and blue colors.
5. Adjust the slant of the deflection yoke while watching the screen, then tighten the fixing screw.

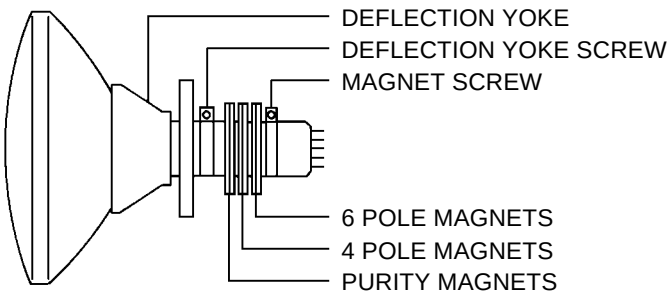


Fig. 4-1

4-3: STATIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 4-2.

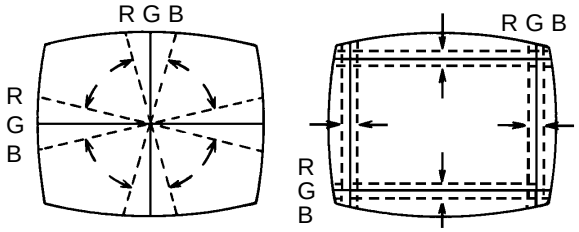
1. Receive the crosshatch pattern from the color bar generator.
2. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
3. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.

4-4: DYNAMIC CONVERGENCE

NOTE

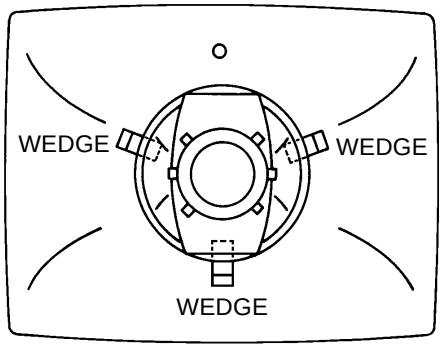
Adjust after performing adjustments in section 4-3.

1. Adjust the differences around the screen by moving the deflection yoke upward/downward and right/left.
   (Refer to Fig. 4-2-a)
2. Insert three wedges between the deflection yoke and CRT funnel to fix the deflection yoke.
   (Refer to Fig. 4-2-b)



UPWARD/DOWNWARD SLANT RIGHT/LEFT SLANT

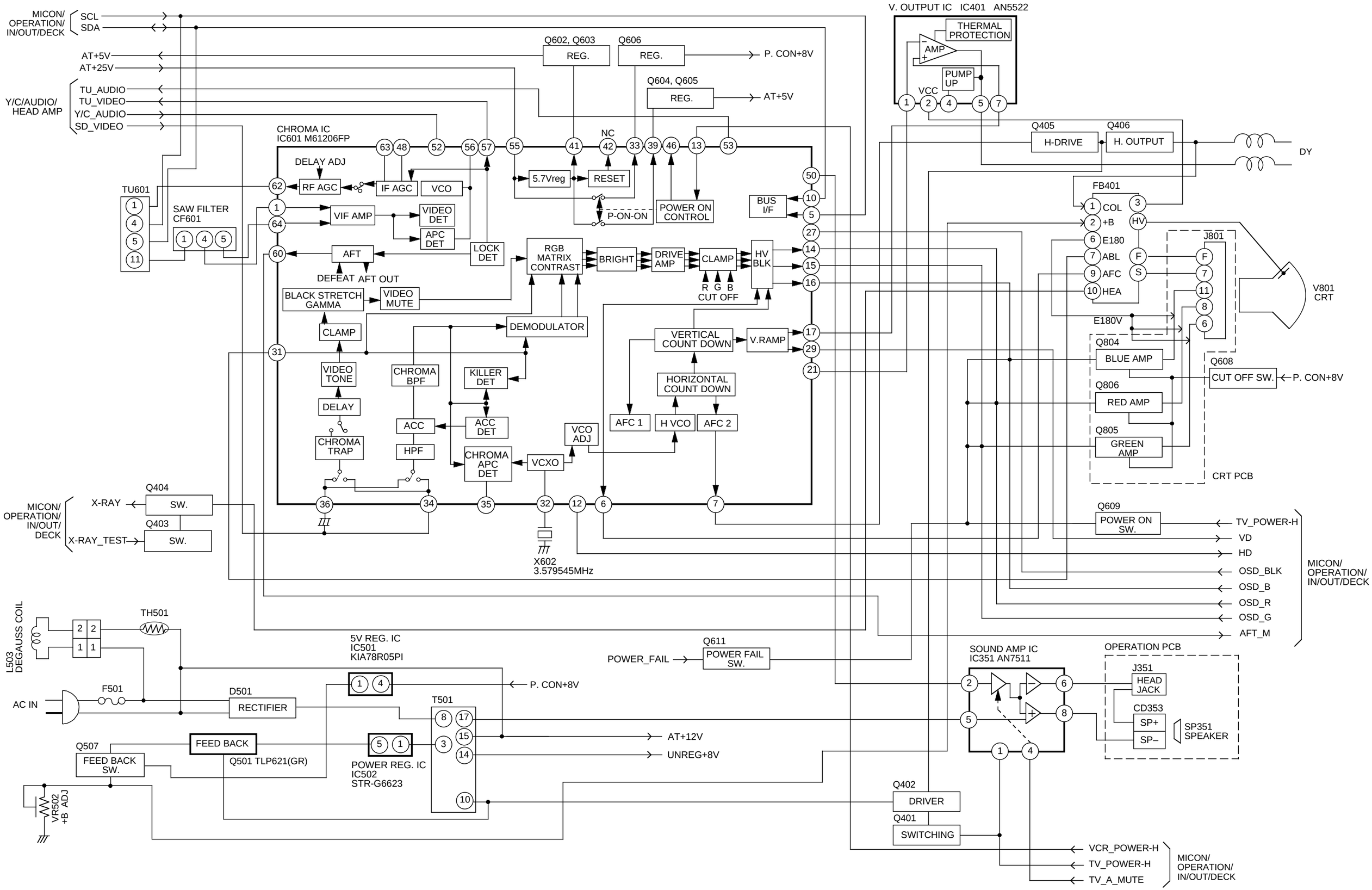
Fig. 4-2-a



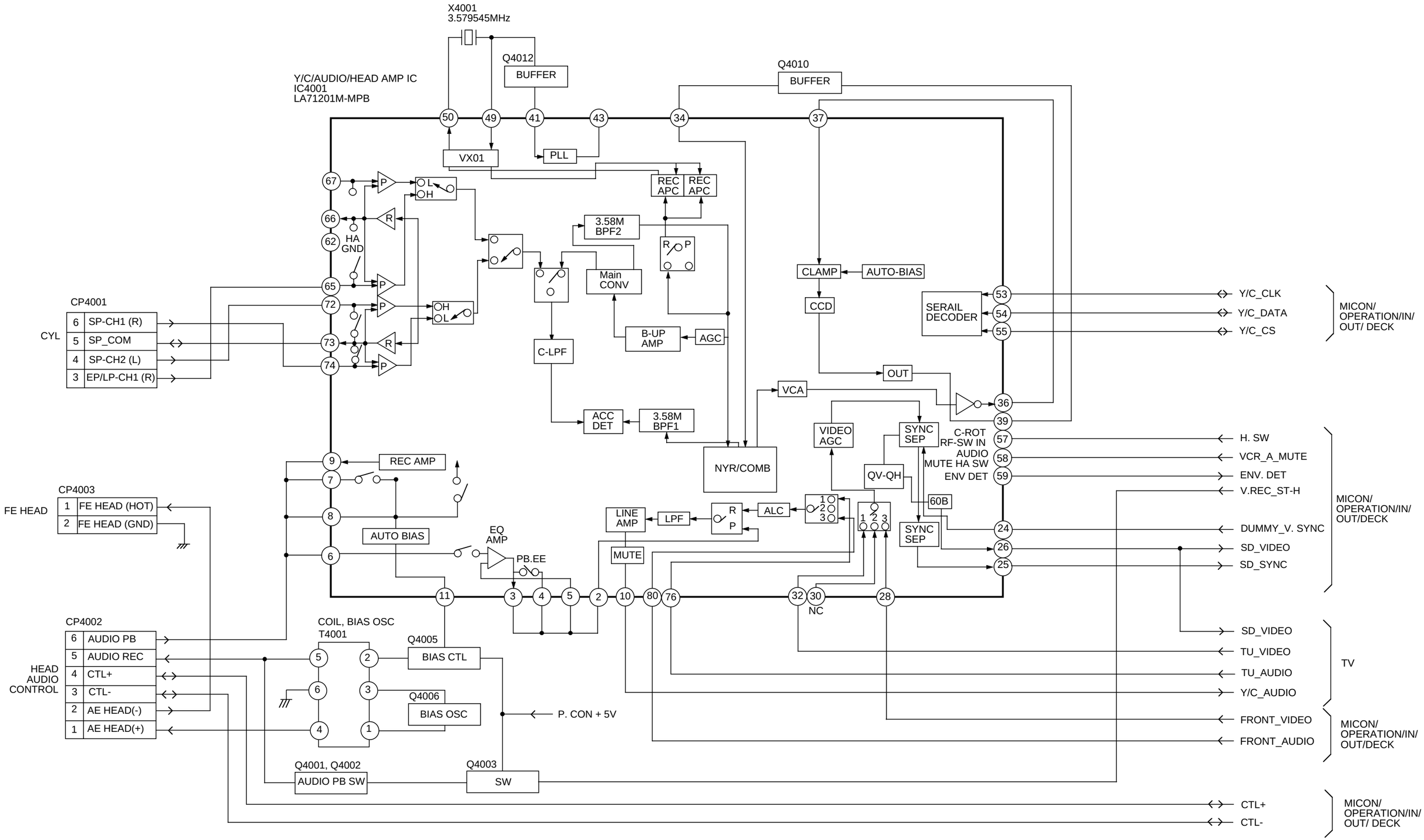
WEDGE POSITION

Fig. 4-2-b

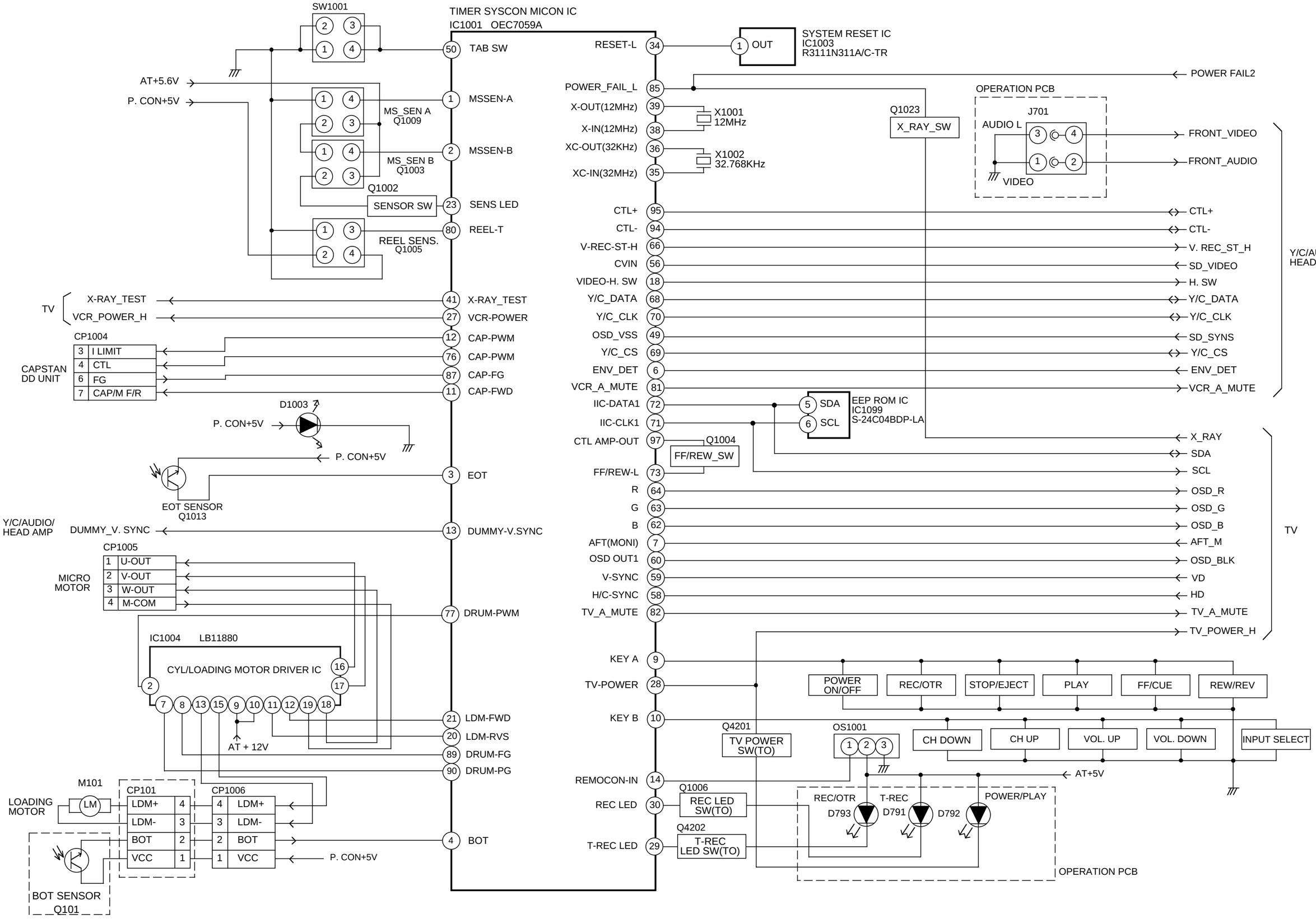
TV BLOCK DIAGRAM



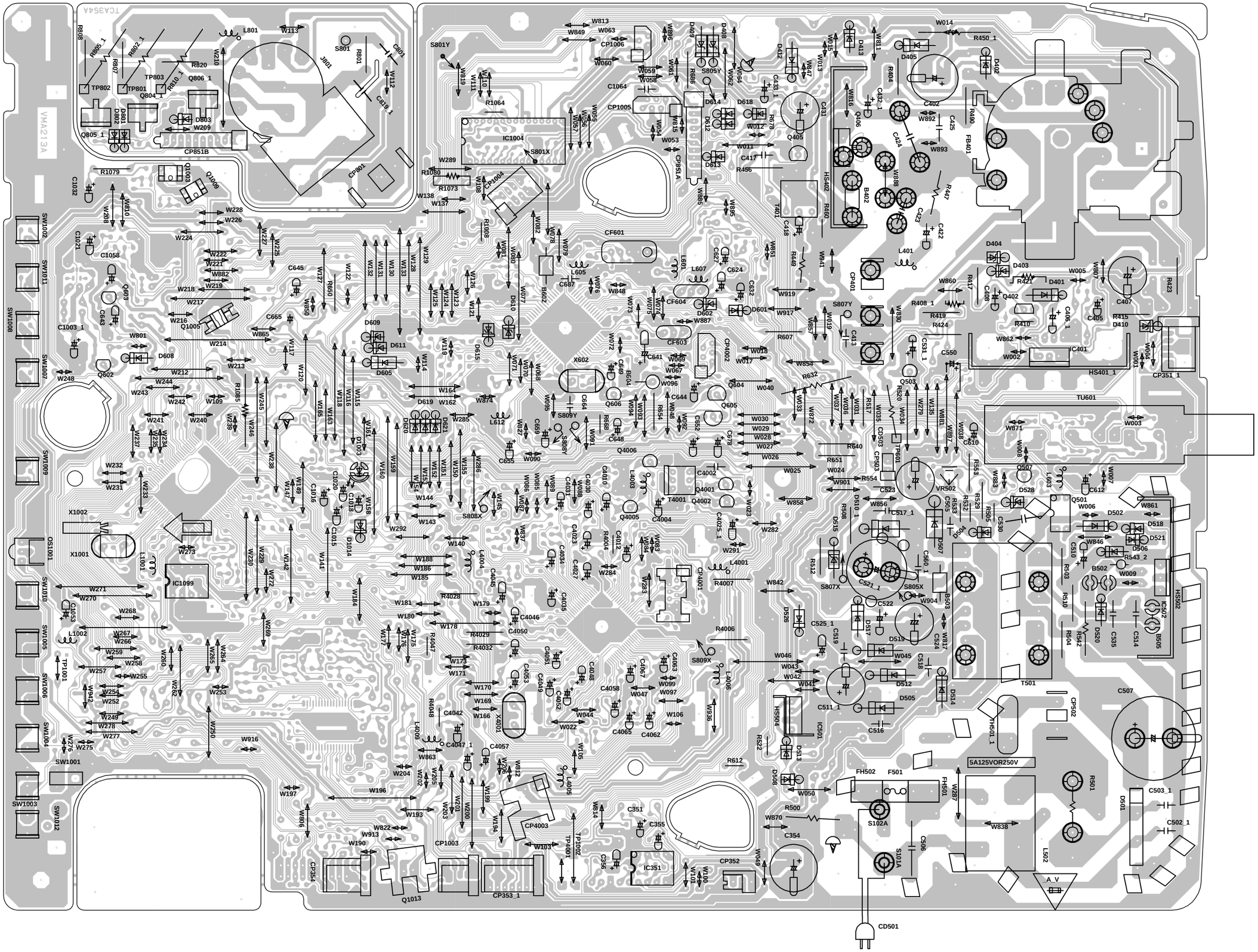
Y/C/AUDIO/HEAD AMP BLOCK DIAGRAM



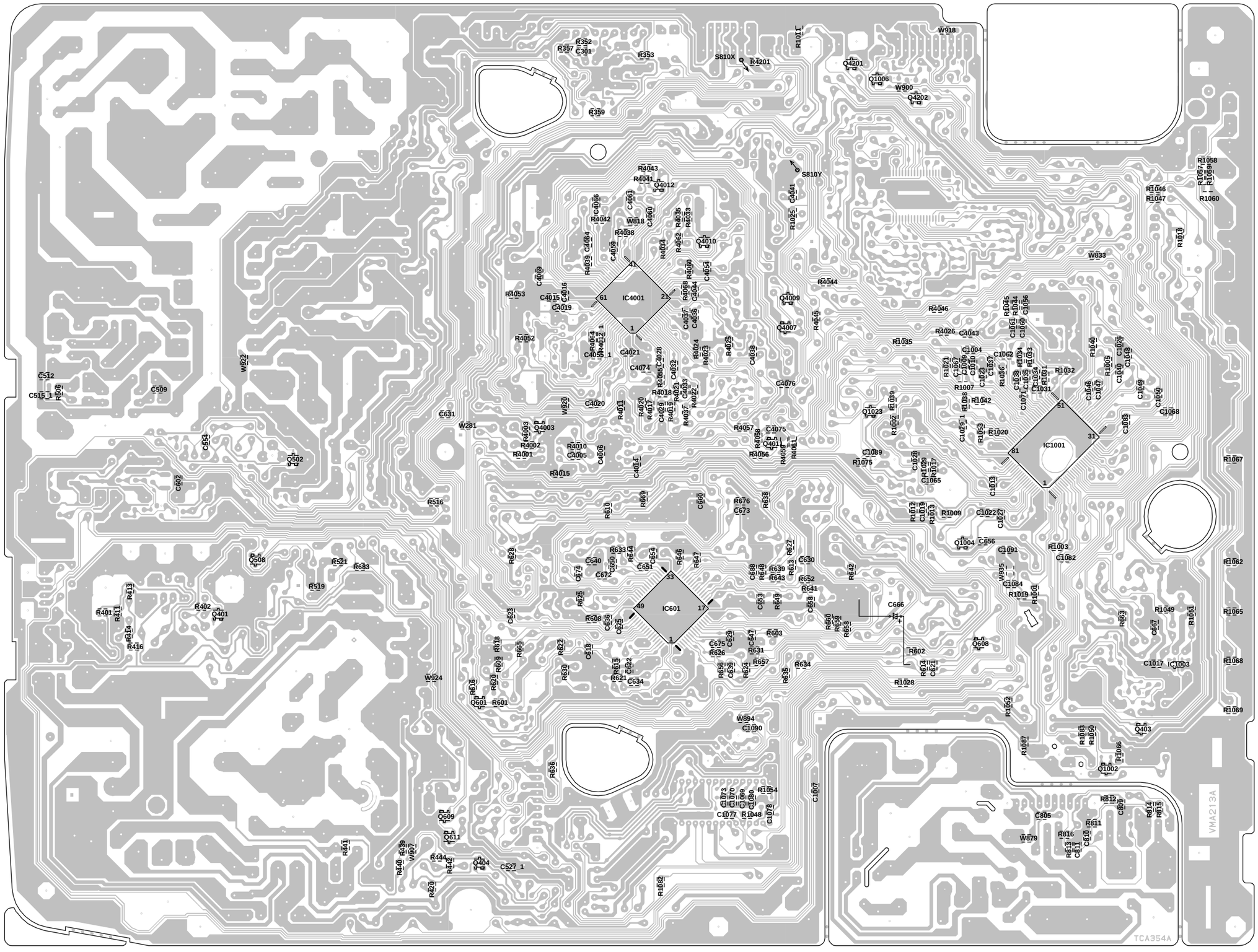
MICON/OPERATION/IN/OUT/DECK BLOCK DIAGRAM



PRINTED CIRCUIT BOARDS
SYSCON/CRT (INSERTED PARTS)
SOLDER SIDE

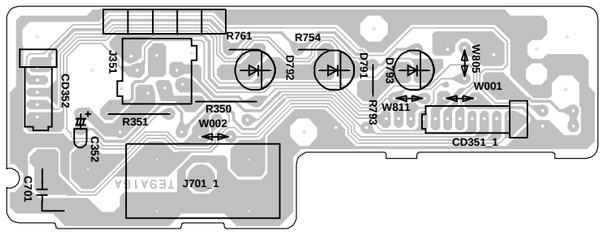


PRINTED CIRCUIT BOARDS
SYSCON/CRT (CHIP MOUNTED PARTS)
SOLDER SIDE

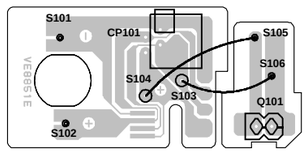


PRINTED CIRCUIT BOARDS

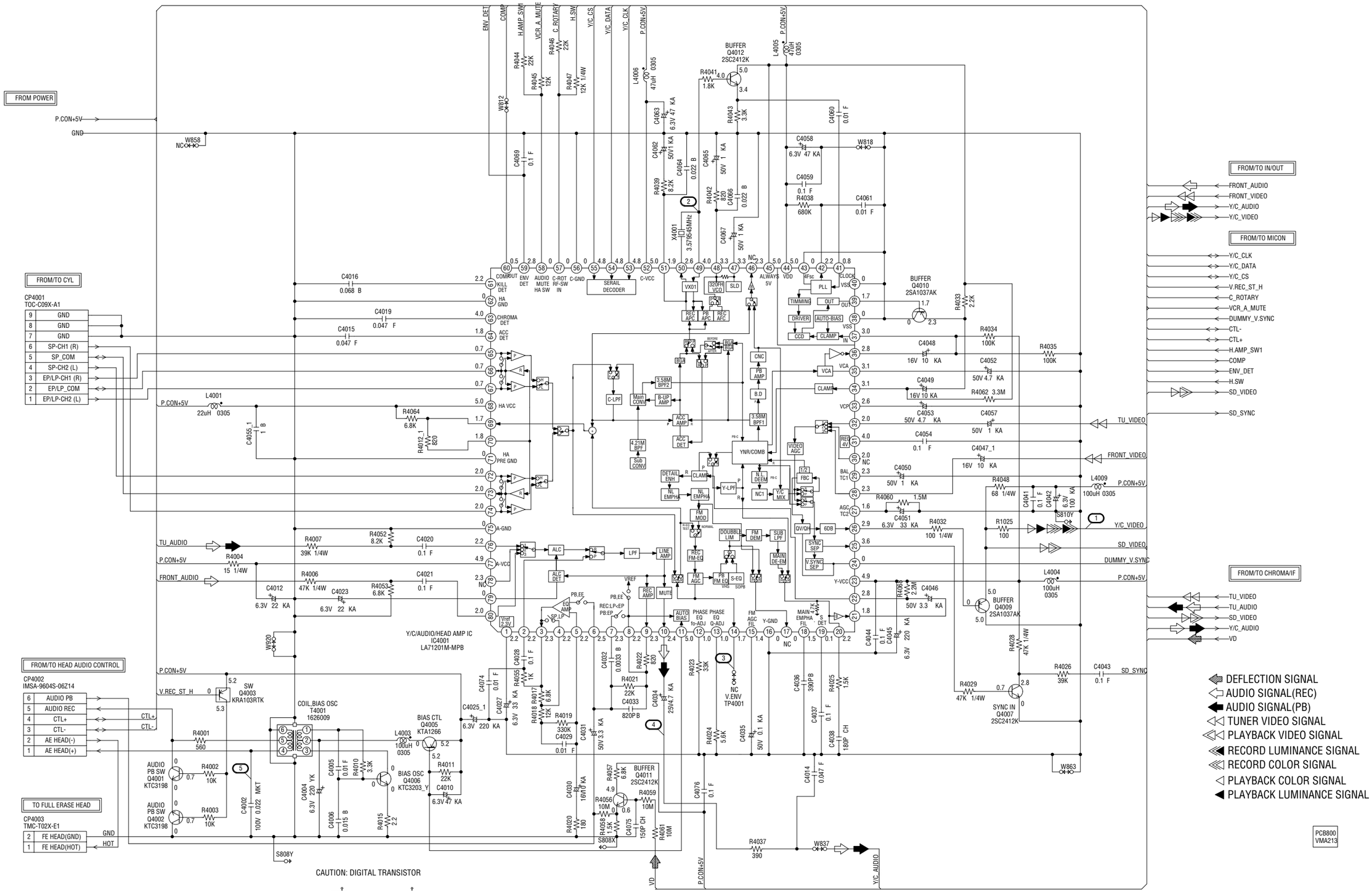
OPERATION
SOLDER SIDE



DECK
SOLDER SIDE



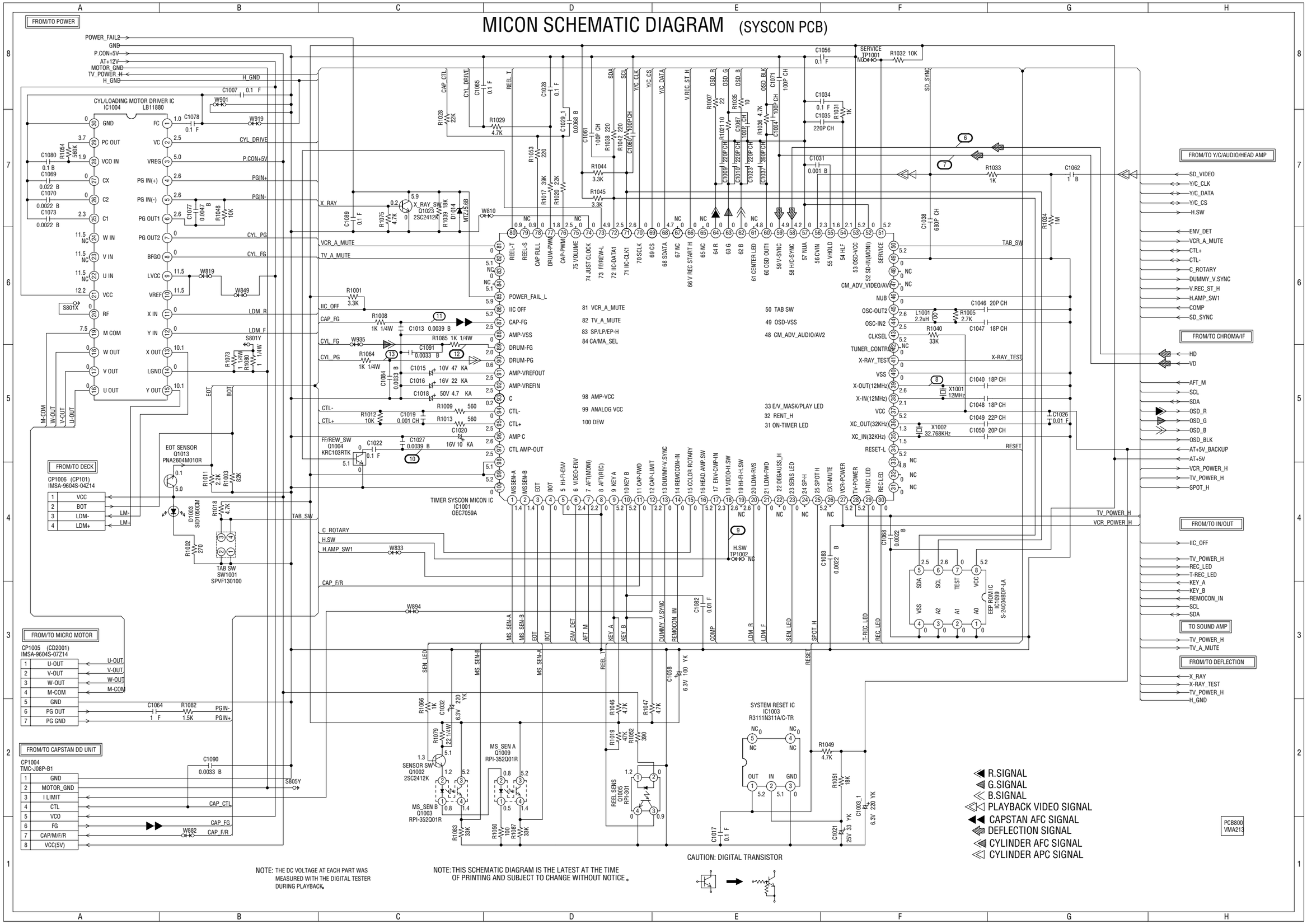
Y/C/AUDIO/HEAD AMP SCHEMATIC DIAGRAM
(SYSCON PCB)



NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

MICON SCHEMATIC DIAGRAM (SYSCON PCB)



IN/OUT SCHEMATIC DIAGRAM
(SYSCON PCB)

TEST POINT
CP351_1
173979-6
6 B.OUT
5 INT-MONI
4 IIC_OFF
3 SDA
2 SCL
1 GND

TEST POINT
CP1003
173979-4
1 Y/C_AUDIO
2 P.CON+5V
3 GND
4 Y/C_VIDEO

TO OPERATION
(CD352) CP354
173979-5
1 POWER_ON_L
2 T-REC_LED
3 REC_LED
4 —
5 AT+5V
NC

FROM/TO OPERATION
(CD351_1) CP353_1
173979-7
1 GND
2 SP_OUT_L
3 SOUND_OUT_L
4 SOUND_GND
5 FRONT_A_IN_L
6 GND
7 FRONT_VIDEO_IN

W918

L1002
100uH

OS1001
PIC-37243SR
GND 3 0
B+ 2 4.8
Vout 1 4.8

C1053
6.3V 220 YK

INPUT SELECT/OTPB SW1002 EVQ21505R
VOL DOWN SW1003 EVQ21505R
VOL UP SW1004 EVQ21505R
CH UP SW1005 EVQ21505R
CH DOWN SW1006 EVQ21505R
R1057 33K
R1058 1.5K
R1059 1K
R1060 820

REW/REV SW1007 EVQ21505R
FF/CUE SW1008 EVQ21505R
PLAY SW1009 EVQ21505R
STOP/EJECT SW1010 EVQ21505R
REC/OTR SW1011 EVQ21505R
POWER ON/OFF SW1012 EVQ21505R
R1062 5.6K
R1065 2.7K
R1067 1.5K
R1068 1K
R1069 820

W806
W942

FROM/TO SOUND AMP
SOUND_GND
SOUND+
SP_OUT

FROM CHROMA/IF
AT+5V
INT-MONI
B.OUT

FROM/TO MICON
IIC_OFF
SDA
SCL
T-REC_LED
REC_LED

W916(TO)
TV POWER SW(TO) Q4201 KRC102RTK
T-REC LED SW(TO) Q4202 KRC102RTK
4.8 3.5 0

W909 (TO)
REC LED SW(TO) Q1006 KRC102RTK
4.5 0

W913 (TO)
W870

R4201 1W 75
FROM POWER
GND
P.CON+5V
S810X

KEY_B
KEY_A
REMOCON_IN
TV_POWER_H
W822

FROM/TO Y/C/AUDIO/HEAD AMP
Y/C_AUDIO
Y/C_VIDEO
FRONT_AUDIO
FRONT_VIDEO

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

CAUTION: DIGITAL TRANSISTOR

≪ B.SIGNAL
⇦ AUDIO SIGNAL(REC)
⬅ AUDIO SIGNAL(PB)
⋘ RECORD LUMINANCE SIGNAL
⋘ RECORD COLOR SIGNAL
◁ PLAYBACK COLOR SIGNAL
◀ PLAYBACK LUMINANCE SIGNAL
◁◁ TUNER VIDEO SIGNAL

PCB800
VMA213

CHROMA/IF SCHEMATIC DIAGRAM(SYSCON PCB)

FROM/TO MICON

SPOT_H
AT+5V
AT+5V_BACKUP
VD
OSD_R
OSD_G
OSD_B
OSD_BLK
SDA
SCL
AFT_M
VCR_POWER_H
HD
TV_POWER_H

TU_VIDEO
INT-MONI
AUDIO_OUT
Y/C_AUDIO
TU_AUDIO
AFT_M

TU601 TECC1040PG32D
AGC ① 1.8
② NC 2.5
③ NC 2.5
SCL ④ 2.5
SDA ⑤ 2.5
⑥ NC 4.9
+5V ⑦
⑧ NC 29.3
+30V ⑨
⑩ NC 0
IF ⑪

FROM/TO POWER
AT+30V
GND
UNREG+8V
AT+25V
P.CON+8V

CHROMA IC IC601 M61206FP

48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32
2.0	2.0	NC 8.2	8.2	8.2	4.0	NC 4.8	5.5	NC 3.7	5.6	0	0	3.2	3.2	2.0	8.8	3.3
Hi Vcc				INTELLIGENT MONI		MCU RESET	5.7V REG OUT(FOR CPU)	Y SW OUT	5v REG	VIDEO/CHROMA GND	TV/Y IN		CHROMA APC FILTER			

49	2.3	
50	2.4	
51	2.3	AUDIO BYPASS
52	3.0	EXT AUDIO IN
53	2.0	FM DIRECT OUT
54	3.2	VIF VCO F/B
55	9.0	VREG Vcc
56	3.0	VIF APC FILTER
57	2.2	VIF VIDEO OUT
58	0	VIF GND
59	0	
60	2.4	AFT OUT
61	2.9 NC	QIF IN
62	2.3	RF AGC OUT
63	2.7	IF AGC FILTER
64	1.5	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
1.5	5.0	5.0	2.5	3.2	0.4	2.6	0	0	3.0	3.3	4.0	4.0	4.8	2.8	3.0	
VIF Vcc		H VCO F/B	SCL	FBP IN	H OUT	DEF		SDA	AFC FILTER	H.PLUSE OUT	POWER ON CONT	R OUT	G OUT			

33	3.3	
32	3.0	
31	0	R IN
30	4.7	V PULSE OUT
29	0	G IN
28	0.1	FAST BLK
27	7.3	SPOT KILLER
26	NC	fsc OUT
25	4.9	
24	4.9	VIDEO CHROMA Vcc
23	4.8	V RAMP CAP
22	2.0	V RAMP FEEDBACK
21	0	B IN
20	8.0	STRAT UP Vcc
19	8.0	
18	3.7	
17		

46 SW REG CONT
47 LIMITER IN
48 IF AGC
49 QIF OUT
50 AUDIO OUT

64 VIF IN
1 VIF IN

34 EXT C in
33 8.7V REG OUT
32 X'TAL
31 ACL/ABCL

17 V OUT
16 B OUT

SAW FILTER CF601 SAF45MFY220ZR (IN IN G OUTOUT ① ② ③ ④ ⑤)

REG. Q602 KTC3203_Y
REG. Q603 KTC3203_Y
REG. Q604 2SD400E
REG. Q605 2SD400E
REG. Q606 KTC3203_Y
D608 SB10-03A3
BUFFER Q601 2SA1037AK
D601 1SS133
D602 MTZJ8.2A
D609 MTZJ6.8B
D610 MTZJ6.8B
D611 MTZJ6.8B
D615 MTZJ6.8B
D621 1SS133
D620 1SS133
D619 1SS133
D605 11ES1-EIC
D614 1SS133
D612 1SS133
D613 1SS133
D618 1SS133
CF603 EFCT4R5YS5A
CF604 EFCT4R5MW5
B602 BLO1RN1-A63
B604 BL02RN1-R62
X602 3.579545MHz
W801 W827 W850 W871 W872 W874 W885 W887 W895 W896 W815 W865 W866 W948
S809X
C659 6.3V 100 KA
C660 0.1 F
C678 35V 100 YK
C641 10V 1000 YK
C643 50V 22 YK
C644 50V 22 YK
C640 0.1 F
C652 16V 47 YK
C648 50V 0.22 KA
C654 18P CH
C673 220P CH
C672 0.01 F
C650 0.015 B
C651 47P CH
C674 120P CH
C612 6.3V 470 YK
C610 50V 4.7 KA
C623 0.0047 B
C631 1 F
C625 1 F
C624 16V 47 KA
C627 50V1 KA
C618 330P CH
C621 0.01 F
C622 0.22 B
C602 0.022 F
C656 0.01 F
C634 0.01 F
C687 0.1 F
C639 0.01 F
C675 68P CH
C645 50V 1 KA
C647 0.01 F
C629 68P CH
C632 50V 2.2 KA
C636 0.01 F
C649 50V 1 KA
C658 0.22 B
C688 0.056 B
C664 63V 1 MKT
C630 100P CH
C666 10V 470 YK
C665 16V 10 KANP
R632 220 2W
R608 10K
R612 680 1/4W
R607 1K 1/2W
R609 680
R618 10M
R614 180K
R601 2.2K
R616 1K
R620 100
R622 390
R615 470
R625 10K
R644 100
R610 1M
R668 470 1/4W
R669 470
R654 820 1/2W
R633 8.2K
R676 1K
R638 15K
R646 18K
R642 10K
R647 2.2K
R643 47K
R648 2.2K
R652 4.7K
R639 2.2K
R627 2.2K
R641 18K
R649 2.2K
R613 2.2K
R650 470 1/4W
R626 10K
R624 2K
R656 1K
R657 1K
R621 2.2K
R630 2.2K
R631 6.8K
R634 100
R635 100
R636 100
R685 1.5K
R659 1.5K
R660 1.5K
R602 100
R603 100
R683 100
R678 4.7K 1/4W
R886 5.6K 1/2W
L603 47uH 0305
L607 22uH
L612 6.8uH
L601 1.2uH
L605 1.2uH

FROM/TO Y/C/AUDIO/HEAD AMP
SD_VIDEO
TU_VIDEO
TU_AUDIO
Y/C_AUDIO
VD

TO IN/OUT
INT-MONI
B.OUT
AT+5V

TO SOUND AMP
AUDIO_OUT

FROM/TO DEFLECTION
GND
V_OUT
ACL
V_FEEDBACK
180V
HEATER
H.PLUSE
H_GND
H_OUT
F_P.CON+15V

V_OUT
OSD_R
OSD_G
OSD_B
HD

CP851A (CP851B) 51048-1000 TO CRT

10	GND
9	CUT OFF
8	G.OUT
7	B.OUT
6	R.OUT
5	NC
4	HEATER
3	H GND
2	NC
1	180V

CUT_OFF
G.OUT
B.OUT
R.OUT
HEATER
H_GND1
180V

FROM POWER
AT+12V
POWER_FAIL

SPOT_H
CUT OFF SW Q608 DTC114EKA
POWER ON SWITCH Q609 KRC102RTK
TV_POWER_H
POWER FAIL SWITCH Q611 KRC102RTK

R.SIGNAL
G.SIGNAL
B.SIGNAL
AUDIO SIGNAL(PB)
AUDIO SIGNAL(REC)
DEFLECTION SIGNAL
PLAYBACK VIDEO SIGNAL
TUNER VIDEO SIGNAL

CAUTION: DIGITAL TRANSISTOR

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

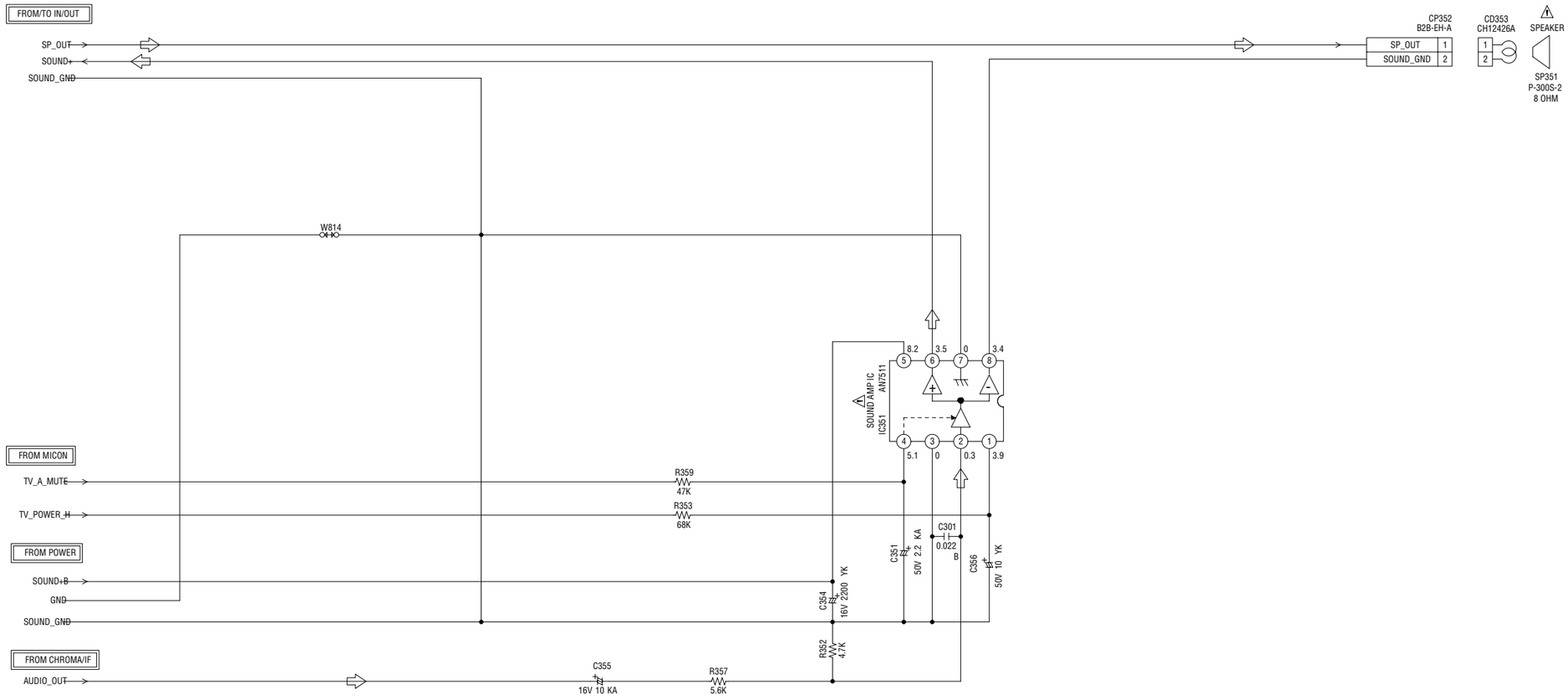
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE .

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY .

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

PCB800 VMA213

SOUND AMP SCHEMATIC DIAGRAM
(SYSCON PCB)



AUDIO SIGNAL(REC)

PCB800
VMA213

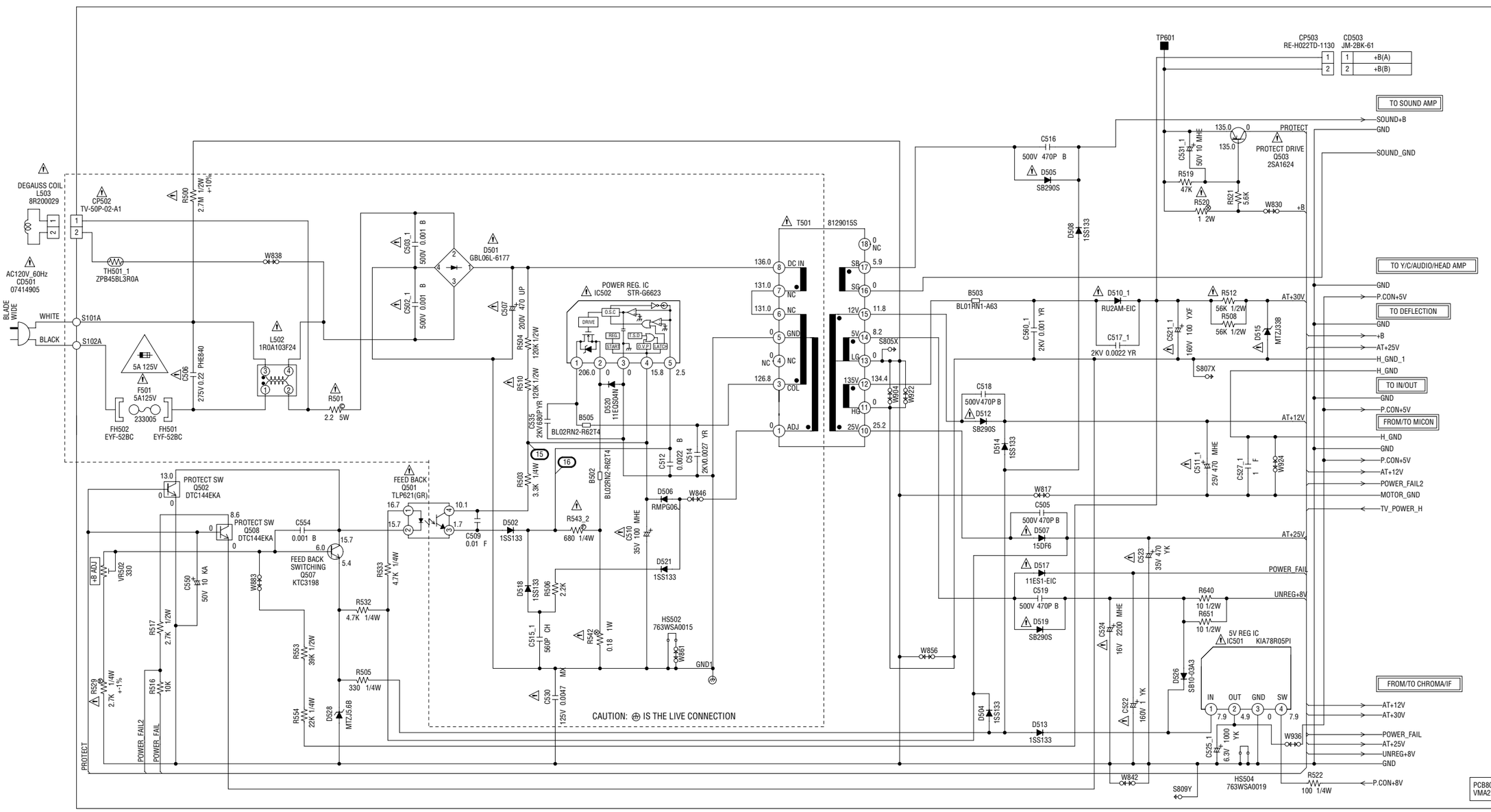
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK。

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

POWER SCHEMATIC DIAGRAM
(SYSCON PCB)

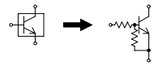


5A 125V

CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE 5A 125V (F501) .

ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES D'INCEIE N'UTILISER QUE DES FUSIBLE DE MEME TYPE 5A 125V (F501) .

CAUTION: DIGITAL TRANSISTOR



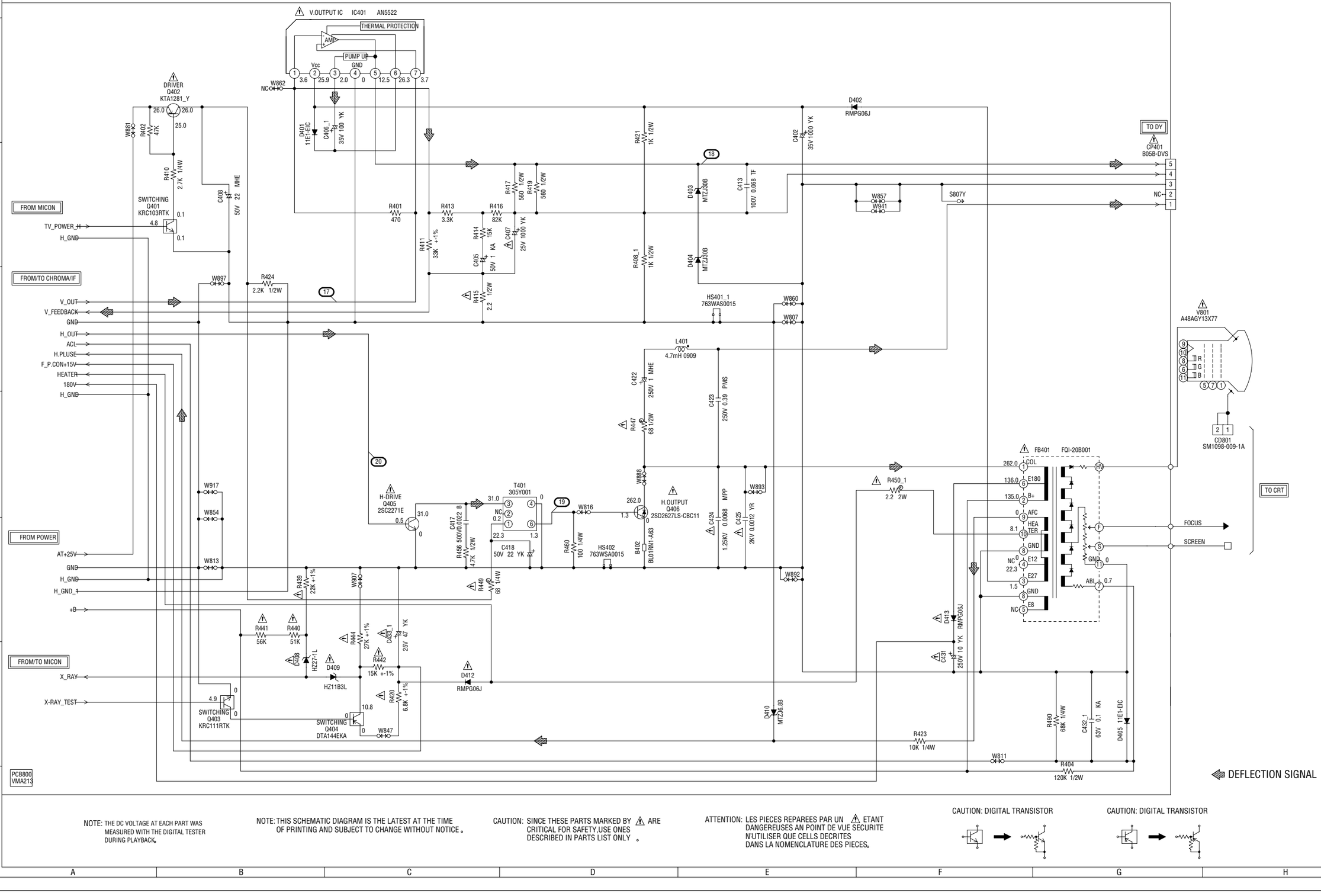
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE .

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY .

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

DEFLECTION SCHEMATIC DIAGRAM
(SYSCON PCB)



NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

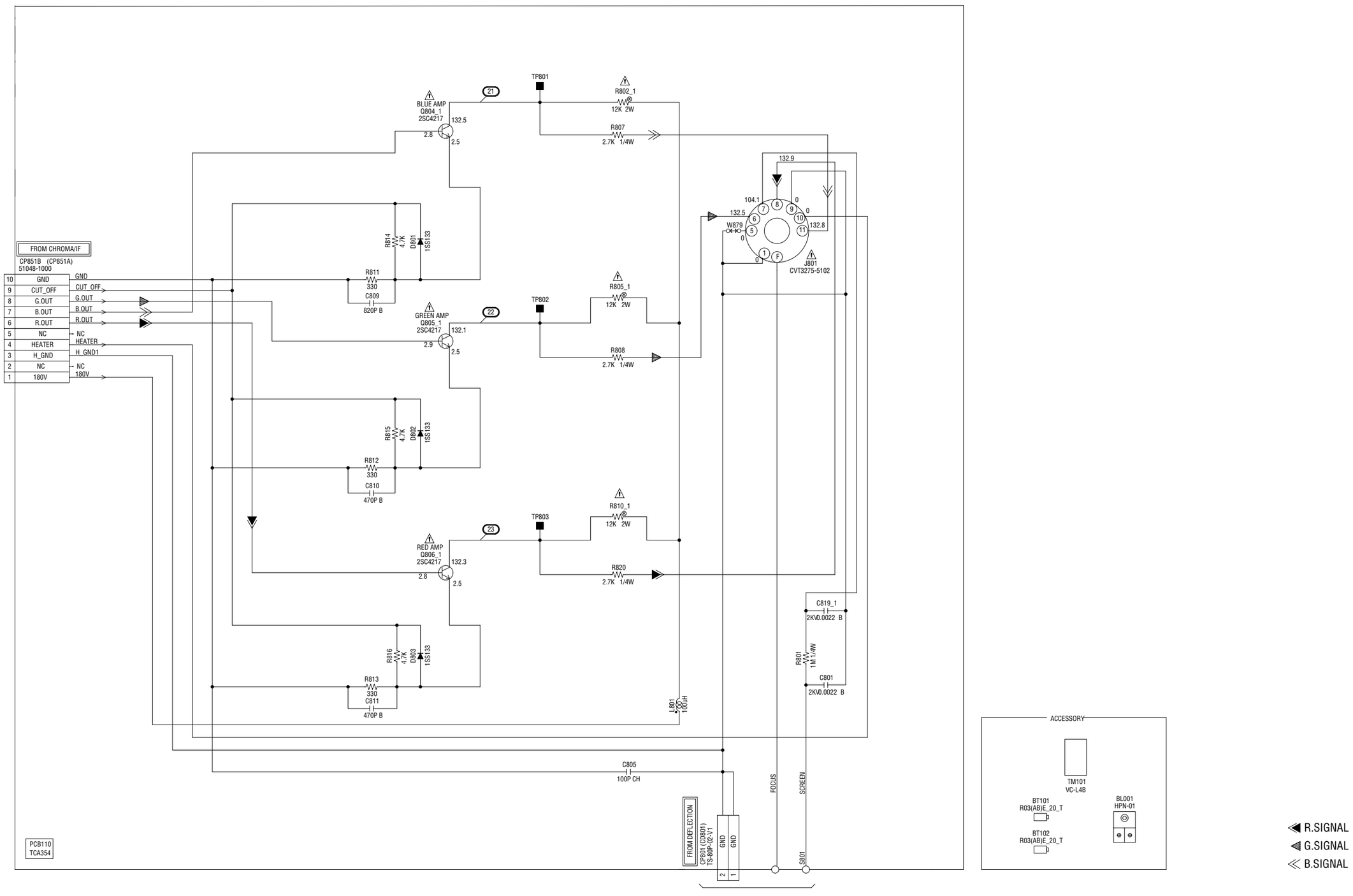
CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

CAUTION: DIGITAL TRANSISTOR

CAUTION: DIGITAL TRANSISTOR

CRT SCHEMATIC DIAGRAM
(CRT PCB)



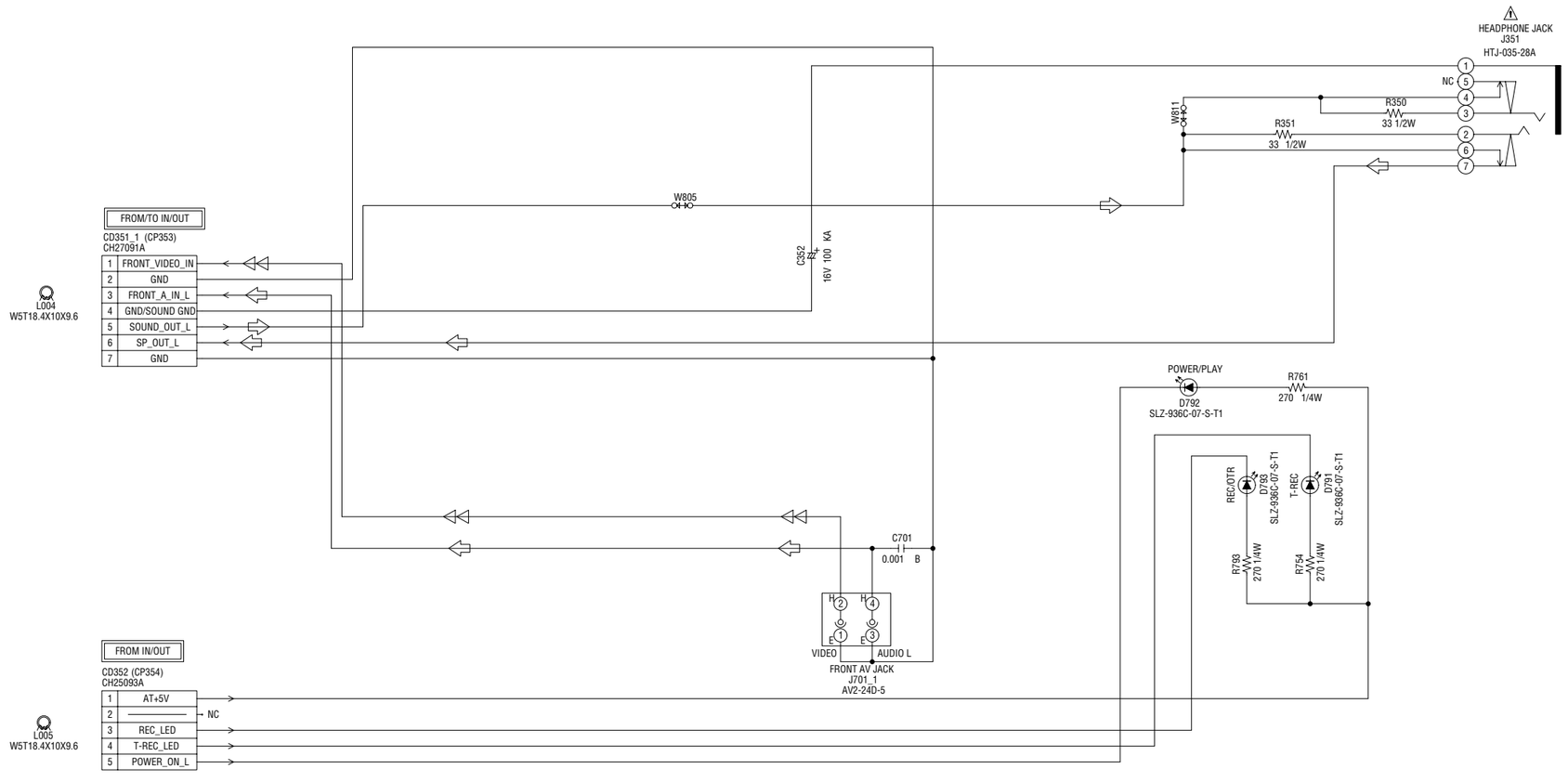
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

OPERATION SCHEMATIC DIAGRAM
(OPERATION PCB)



PCB030
TE9A16

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

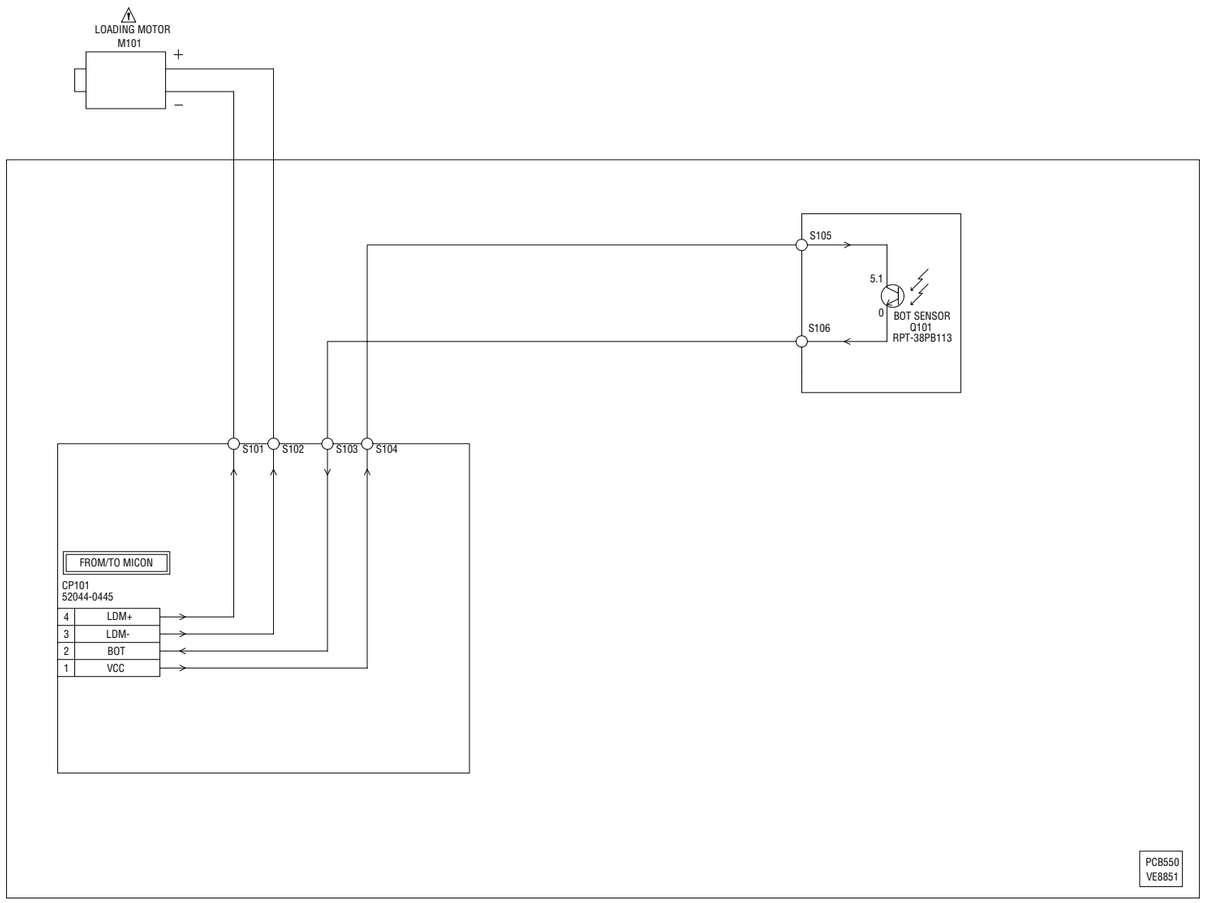
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

⇦ AUDIO SIGNAL(REC)
⇦⇦ TUNER VIDEO SIGNAL

DECK SCHEMATIC DIAGRAM
(DECK PCB)



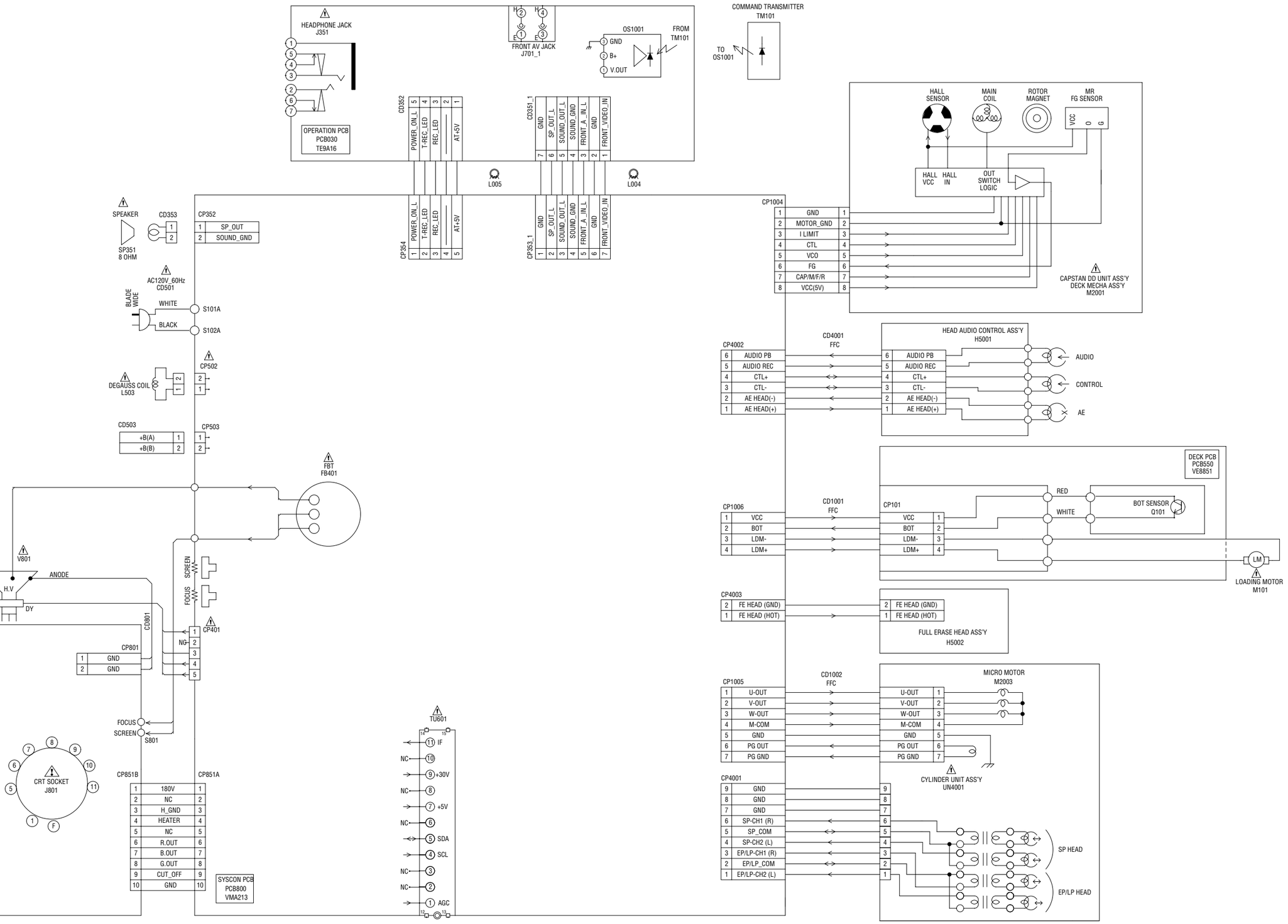
CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK。

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

INTERCONNECTION DIAGRAM



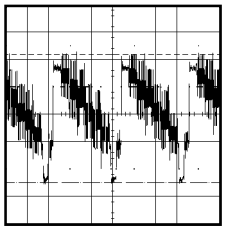
NOTE: THIS INTERCONNECTION DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

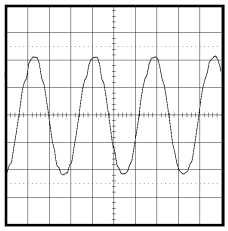
ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

WAVEFORMS

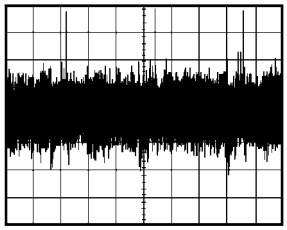
Y/C/AUDIO/HEAD AMP



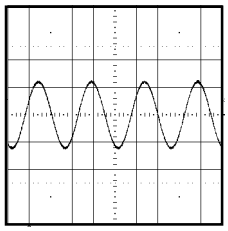
① PB
0.5V 20µs/div



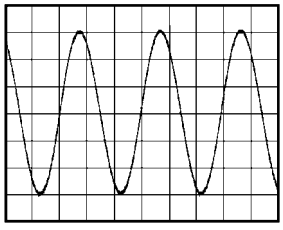
② POWER ON
100mV 0.1µs/div



③ PB
10mV 20us/div

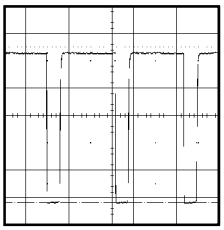


④ PB
0.5V 1ms/div

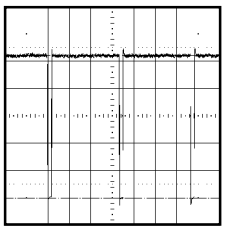


⑤ REC
10.0V 5us/div

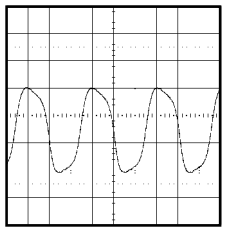
MICON



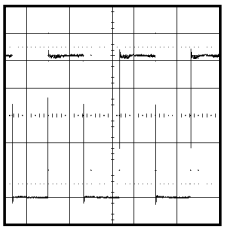
⑥ POWER ON
1.0V 20µs/div



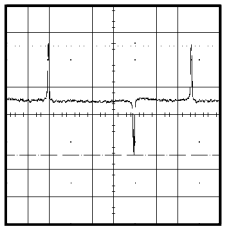
⑦ POWER ON
0.5V 10ms/div



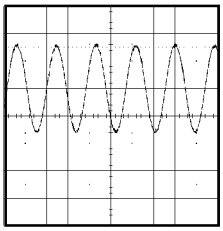
⑧ POWER ON
1.0V 10µs/div



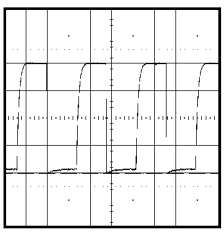
⑨ PB
1.0V 10ms/div



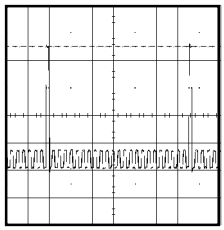
⑩ PB
1.0V 5ms/div



⑪ PB
0.5V 0.5ms/div

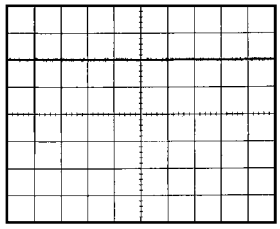


⑫ PB
1.0V 0.5ms/div

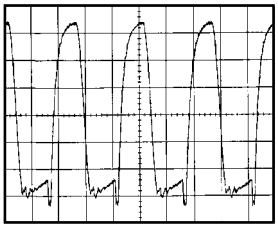


⑬ PB
1.0V 5ms/div

POWER



⑮ 5.0V 20ms/div

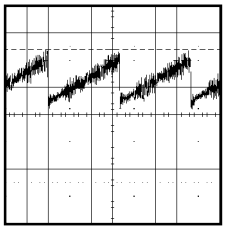


⑯ 500mV 5µs/div

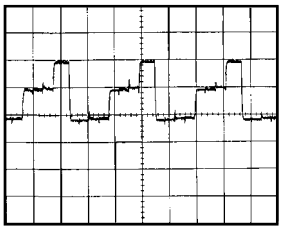
NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

WAVEFORMS

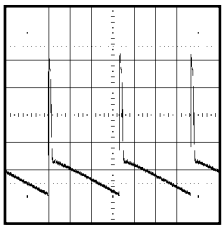
DEFLECTION



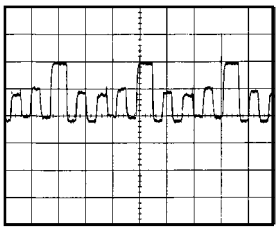
⑰ 0.5V 5ms/div



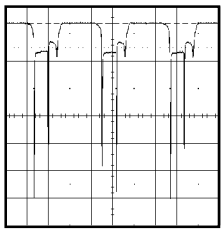
㉒ 50.0V 20µs/div



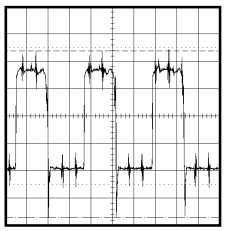
⑱ 10.0V 5ms/div



㉓ 50.0V 20µs/div

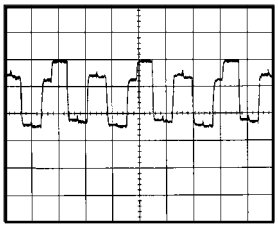


⑲ 2.0V 20µs/div



⑳ 200mV 20µs/div

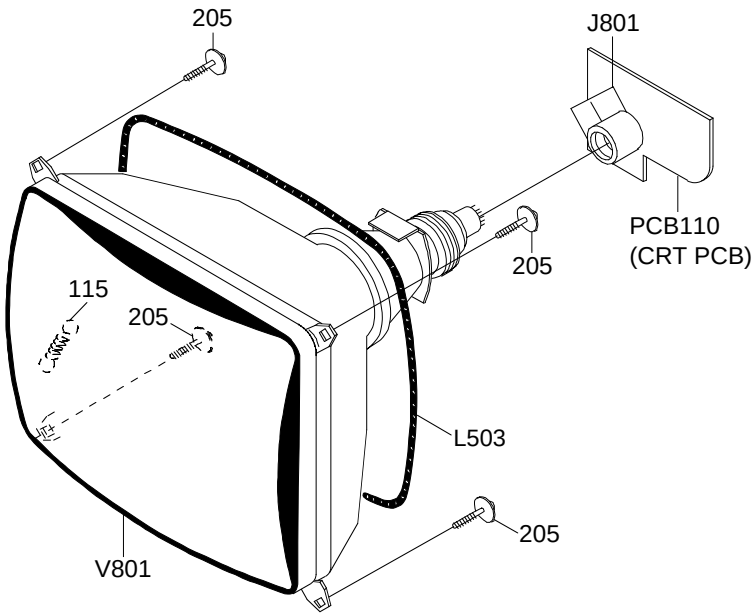
CRT

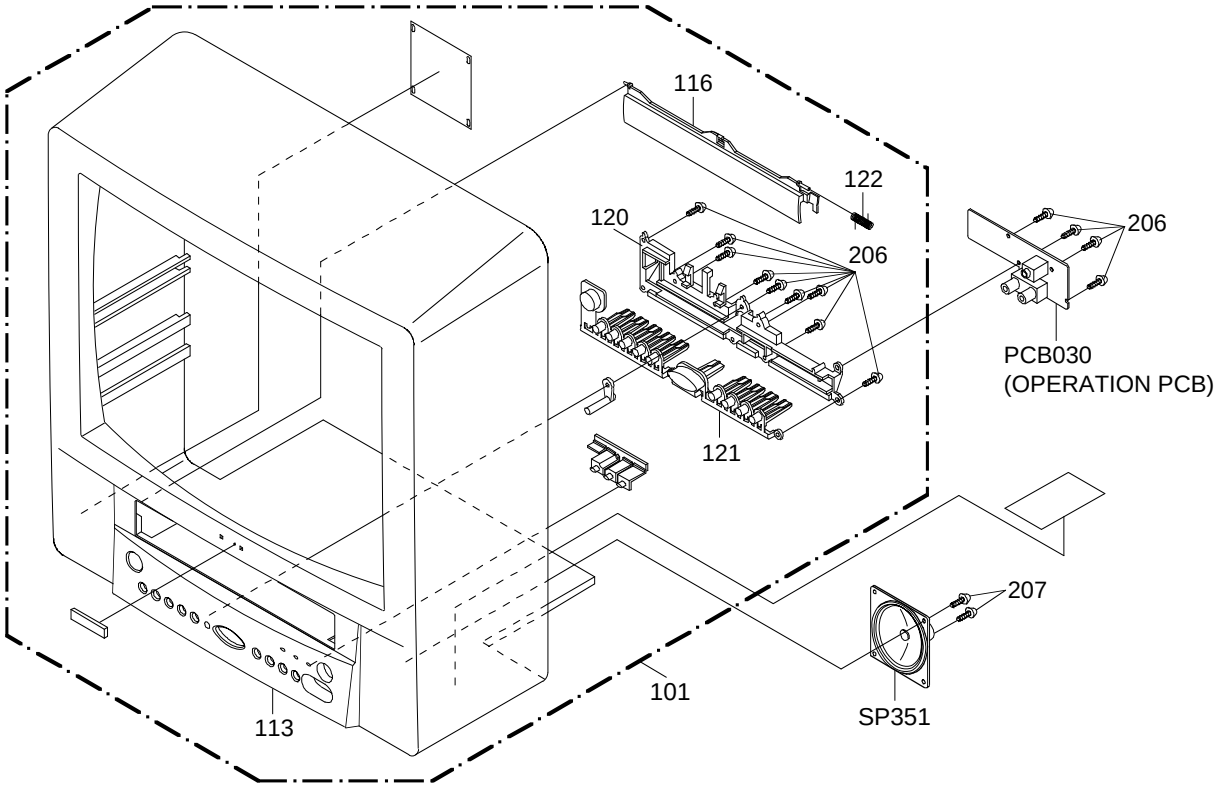


㉑ 50.0V 20µs/div

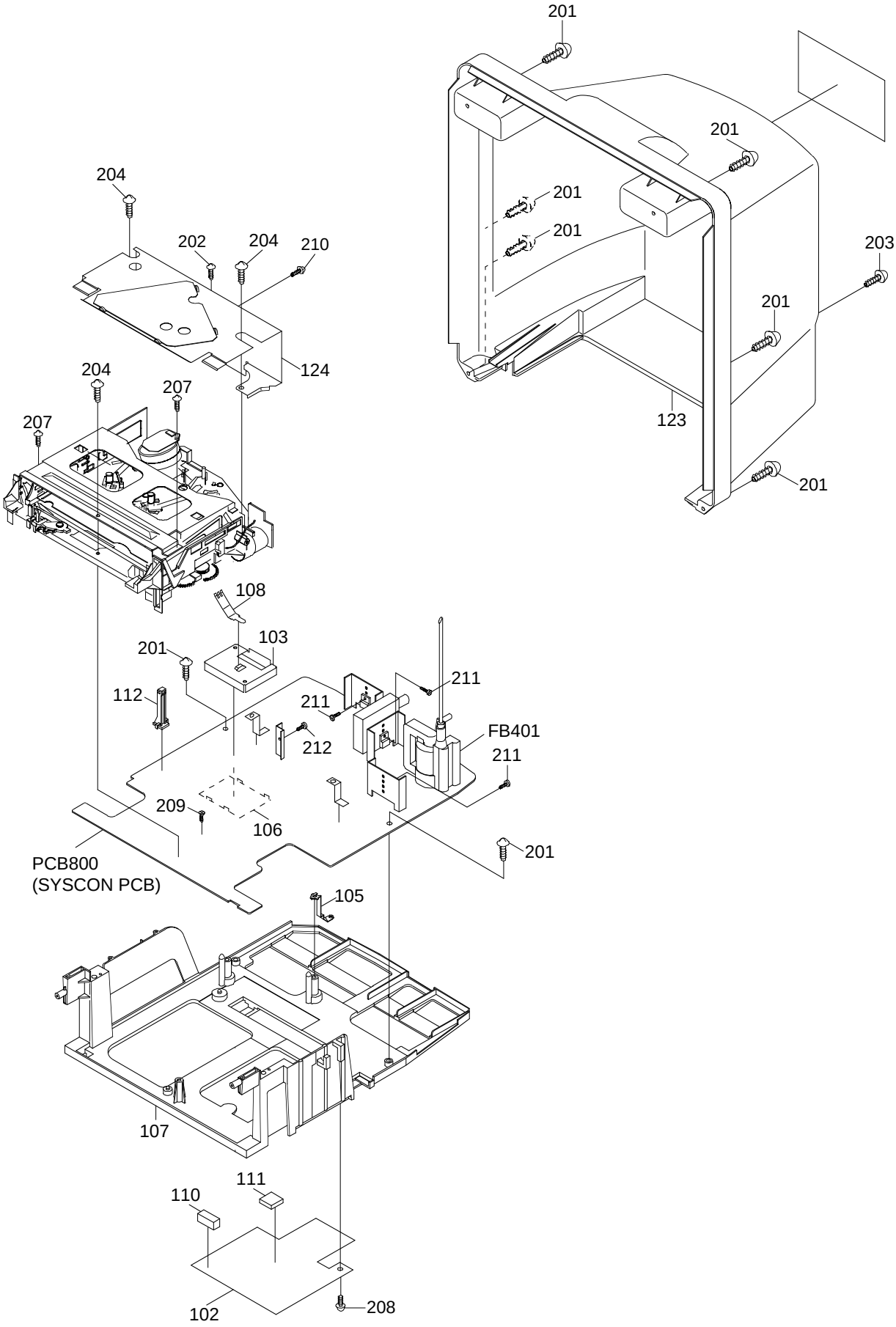
NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

MECHANICAL EXPLODED VIEW

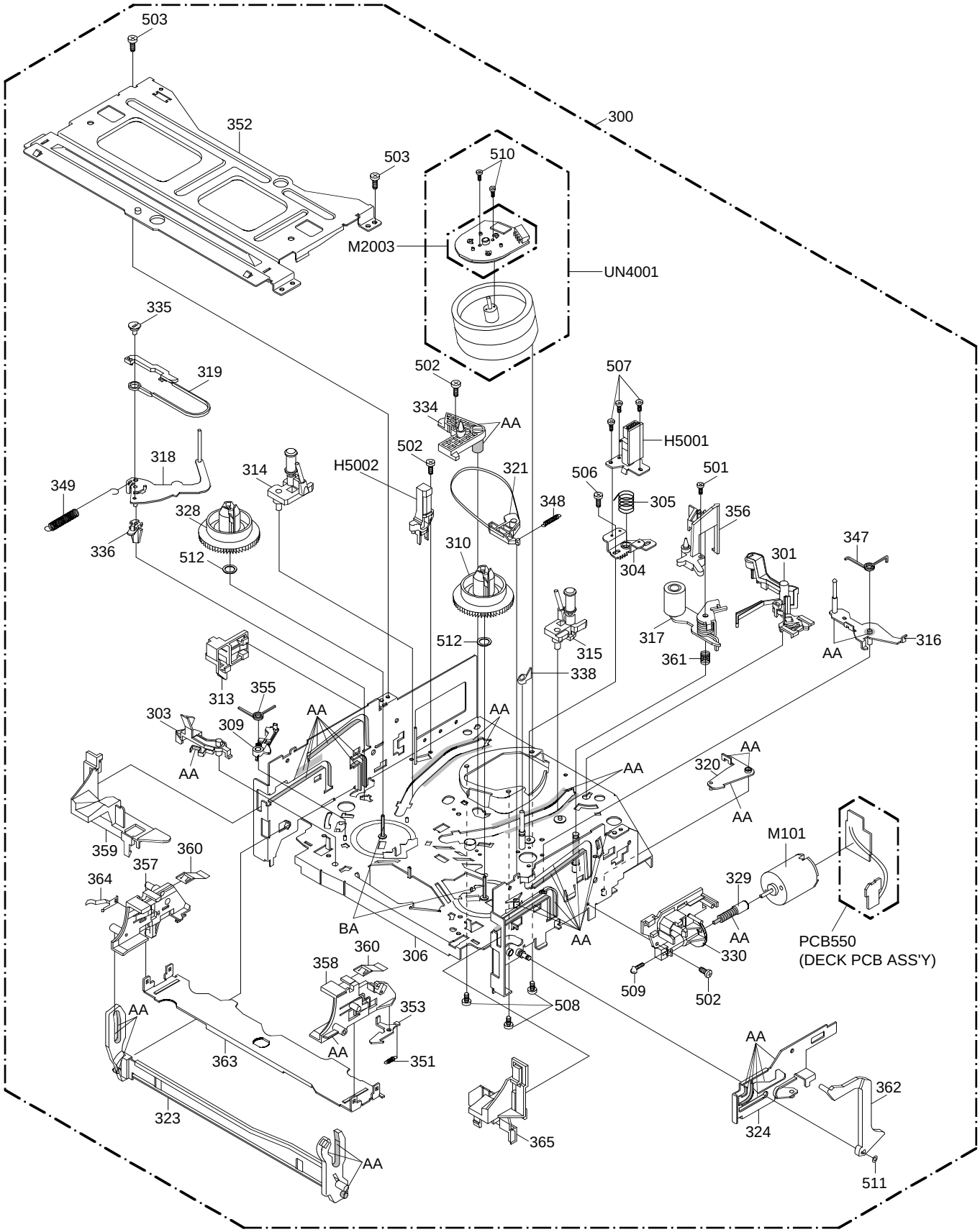




MECHANICAL EXPLODED VIEW



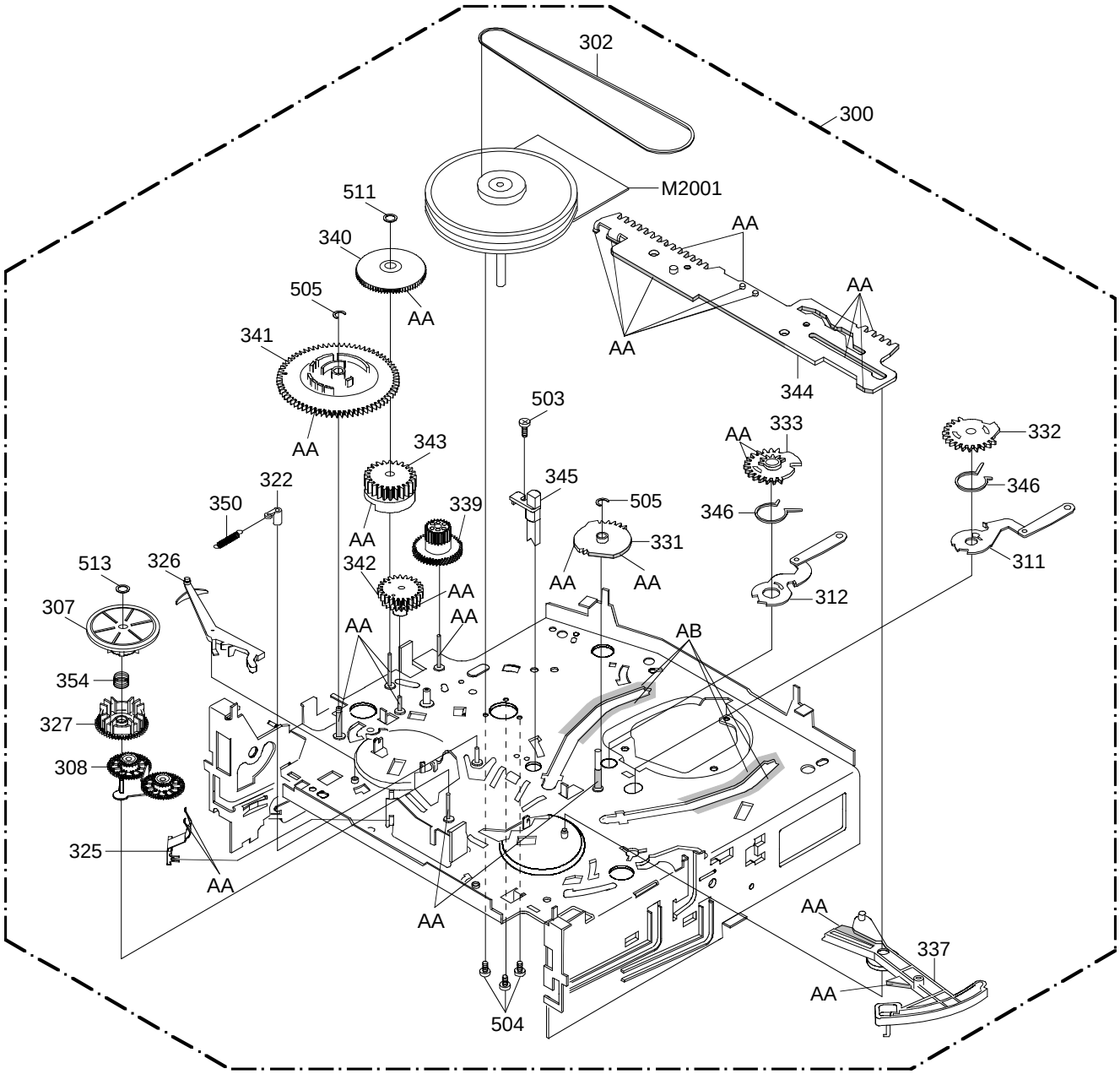
CHASSIS EXPLODED VIEW (TOP VIEW)



CLASS	MARK
GREASE	AA
OIL	BA

NOTE: Applying positions AA and BA for the grease or oil are displayed for this section.
Check if the correct grease or oil is applied for each position.

CHASSIS EXPLODED VIEW (BOTTOM VIEW)



CLASS	MARK
GREASE	AA
OIL	BA

NOTE: Applying positions AA and BA for the grease or oil are displayed for this section.
Check if the correct grease or oil is applied for each position.

MECHANICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
101	BZ610191	A58101A720	CABINET,FRONT ASSY	
102	BZ710248	752WSAA028	SHIELD,BOTTOM	
103	BZ710328	752WSA0209	SHIELD,CASE HEAD AMP	
105	BZ710235	753WSA0120	PLATE,BOTTOM-EARTH	
106	BZ710270	753WSA0130	SHIELD,COVER HEAD AMP	
107	BZ710271	761WPA0196	HOLDER,DECK	
108	BZ710331	753WUAA006	SPRING,EARTH HEAD AMP	
110	BZ710251	800WFA0037	CUSHION	15x5xT=6
111	BZ710252	800WFA0038	CUSHION	10x10xT=2
112	BZ710178	85OP700036	HOLDER,EOT SENSOR	
113	BZ710416	701WPJB164	CABINET,FRONT	
115	BZ710009	741WUA0019	SPRING,EARTH	
116	BZ710417	712WPJA851	FLAP	
120	BZ710008	738WPA0014	BUTTON,BASE	
121	BZ710418	735WPJA310	BUTTON,FRAME	
122	BZ710010	743WKA0032	SPRING,FLAP	
123	BZ710317	702WPA0671	CABINET,BACK	
124	BZ710316	752WSA0223	PLATE,DECK SHIELD ASS'Y	
201	BZ710036	8117540B04	SCREW,TAPPING(B0) TRUSS	4x20
202	BZ710322	8117D30804	SCREW,TAPPING(B0) WH8	3x8
203	BZ710320	8117540804	SCREW,TAPPING(B0) TRUSS	4x8
204	BZ710034	8117140A24	SCREW,TAPPING(B0) PAN	4x12
205	BZ710321	8121F50B84	SCREW,TAPPING(B0) GW20 FLAT	5x28
206	BZ710032	8110630A24	SCREW,TAP TITE(P) BRAZIER	3x12
207	BZ710030	8110630804	SCREW,TAP TITE(P) BRAZIER	3x8
208	BZ710158	8110630604	SCREW,TAP TITE(P) BRAZIER	3x6
209	BZ710028	8110330804	SCREW,TAP TITE(P) FLAT	3x8
210	BZ710017	8107226604	SCREW,TAP TITE(S) BIND	2.6x6
211	BZ710239	8109I30A04	SCREW,TAP TITE(B) WH7	3x10
212	BZ710352	8109I30604	SCREW,TAP TITE(B) WH7	3x6
---	BZ710154	792WHA0260	PACKAGE,TOP	
---	BZ710155	792WHA0261	PACKAGE,BOTTOM	
---	BZ710419	793WCDA905	GIFT BOX	
---	BZ614224	J5800101	INSTRUCTION BOOK	

CHASSIS REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
300	BZ610223	A58008A420A	DECK ASSY	A58008A420A
301	BZ710073	85OA500022	AHC ASS'Y	
302	BZ710193	85OP200290	BELT,CAPSTAN (S)	
303	BZ710132	85OP900710	LEVER,REC	
304	BZ710094	85OP500083	BASE,AC HEAD	
305	BZ710112	85OP800324	SPRING,AC HEAD	
306	BZ710354	85OA000449	MAIN CHASSIS ASS'Y (3V)	
307	BZ710195	85OA200082	CLUTCH ASS'Y(S2)	
308	BZ710355	85OA200088	ARM,IDLER ASS'Y 3V	
309	BZ710197	85OP600556	ARM,SS BRAKE (S)	
310	BZ710198	85OP200292	REEL,T (S)	
311	BZ710063	85OA300061	LOADING ARM S ASS'Y	
312	BZ710064	85OA300062	LOADING ARM T ASS'Y	
313	BZ710216	85OP900714	COVER,SENSOR L3	
314	BZ710356	85OA400220	INCLINED BASE S UNIT 3V	
315	BZ710357	85OA400221	INCLINED BASE T UNIT 3V	
316	BZ710200	85OA400199	P5-3 ARM ASS'Y(S)	
317	BZ710072	85OA400205	PINCH ROLLER BLOCK	
318	BZ710065	85OA400175	TENSION ARM ASS'Y	
319	BZ710374	85OA400216	TENSION BAND ASS'Y 3V	
320	BZ710067	85OA400178	PINCH ROLLER LEVER ASS'Y	
321	BZ710375	85OA600197	BRAKE T ASS'Y 3V	
322	BZ710359	85OP500087	HOLDER,SPRING(SV)	
323	BZ710360	85OA900223	LINK UNIT(SV)	
324	BZ710361	85OP900716	LEVER,LINK(SV)	
325	BZ710204	85OP200284	LEVER,CLUTCH (S)	
326	BZ710205	85OP200285	ACTUATOR,CLUTCH	
327	BZ710206	85OP200298	GEAR,COUPLING(S2)	
328	BZ710207	85OP200291	REEL,S (S)	
329	BZ710362	85OP600566	WORM(SV)	
330	BZ710363	85OP600567	BRACKET,MOTOR(SV)	
331	BZ710364	85OP300193	GEAR,MAIN LOADING	
332	BZ710087	85OP300179	GEAR,LOADING S	
333	BZ710088	85OP300180	GEAR,LOADING T	
334	BZ710365	85OP300189	HOLDER,LOADING GEAR (S-ZV)	
335	BZ710090	85OP400472	ADJUST,TENSION	
336	BZ710093	85OP400492	HOLDER,TENSION	
337	BZ710092	85OP400490	LEVER,TENSION	
338	BZ710366	85OP400520	CAP.P4	
339	BZ710097	85OP600543	GEAR,JOINT	
340	BZ710098	85OP600544	GEAR,MIDDLE	
341	BZ710367	85OP600572	CAM,MAIN(S)	
342	BZ710101	85OP600546	CAM,P5	
343	BZ710172	85OP600565	CAM,PINCH ROLLER	
344	BZ710210	85OP600561	ROD,MAIN(S)	
345	BZ710106	85OP700035	REFLECTOR,LED	
346	BZ710107	85OP800318	SPRING,LOADING GEAR	
347	BZ710211	85OP800334	SPRING,P5 (S)	
348	BZ710212	85OP800335	SPRING,BRAKE T (S)	
349	BZ710110	85OP800322	SPRING,TENSION	
350	BZ710213	85OP800336	SPRING,CAP BRAKE (S)	
351	BZ710118	85OP800342	SPRING,LOCKER (S)	
352	BZ710128	85OP900695	BRACKET,TOP	
353	BZ710217	85OP900713	LOCKER,R2	
354	BZ710115	85OP800330	SPRING,RING	
355	BZ710214	85OP800337	SPRING,SS BRAKE (S)	
356	BZ710119	85OP900680	OPENER,CASS	
357	BZ710368	85OP900722	CASS SIDE L(SV)	
358	BZ710369	85OP900723	CASS SIDE R(SV)	
359	BZ710314	85OP900728	TAPE GUIDE L(P,R)	
360	BZ710127	85OP900694	SPRING,PACK	
361	BZ710117	85OP800341	SPRING,P/R ARM	
362	BZ710123	85OP900688	LEVER,FLAP	
363	BZ710370	85OP900717	CASS HOLDER(SV)	
364	BZ710129	85OP900696	SPRING,CASS EARTH	
365	BZ710315	85OP900729	TAPE GUIDE R	

CHASSIS REPLACEMENT PARTS LIST

	Location No.	TSB P/N	Reference No.	Description	
	501	BZ710048	8107126A04	SCREW,TAP TITE(S) PAN	2.6x10
	502	BZ710049	8107226804	SCREW,TAP TITE(S) BIND	2.6x8
	503	BZ710017	8107226604	SCREW,TAP TITE(S) BIND	2.6x6
	504	BZ710050	8109126604	SCREW,TAP TITE(B) PAN	2.6x6
	505	BZ710058	83ETW30000	E-RING	3.0
	506	BZ710371	8107226404	SCREW,TAP TITE(S) BIND	2.6x4
	507	BZ710046	8102120604	SCREW,PAN	M2x6
	508	BZ710219	810A126504	SCREW/WASHER(A)	M2.6x5
	509	BZ710241	810A130504	SCREW/WASHER(A)	M3x5
	510	BZ710390	8107226504	SCREW,TAP TITE(S) BIND	2.6x5
	511	BZ710055	82P266005N	POLYSLIDER WASHER(CUT)	2.6x6.0xT0.5
	512	BZ710218	82Q2647C5N	POLYSLIDER WASHER	2.6x4.7xT0.25
	513	BZ710054	82P184505N	POLYSLIDER WASHER(CUT)	1.8x4.5xT0.5
	CP101	BZ614040	069R740018	CONNECTOR PCB SIDE	52044-0445
	H5001	BZ710040	1523D91034	HEAD (AUDIO CONTROL)	HVMXA1072A
	H5002	BZ710041	1543D02013	HEAD (FULL ERASE)	HVFHP0032A
⚠	M101	BZ710044	1596P78001	MOTOR (LOADING)	MXN13FB11H
⚠	M2001	BZ710372	1594S98001	CAPSTAN DD UNIT	F2QSB36
⚠	M2003	BZ710391	1589S11015	MICRO MOTOR	I2OAL01
	PCB550	BZ610053	A4C831B550	DECK PCB ASS'Y	VE8851
	Q101	BZ410026	0000700320	TRANSISTOR,PHOTO	RPT-38PB113
⚠	UN4001	BZ610173	A4E304B500	CYLINDER UNIT ASSY	A4E304B500

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		RESISTORS		
R408	BZ210180	R002T2102J	RC	1K OHM 1/2W
⚠R415	BZ210053	R002T22R2J	RC	2.2 OHM 1/2W
⚠R420	BZ210102	R801R7682F	RC	6.8K OHM 1/10W
R421	BZ210180	R002T2102J	RC	1K OHM 1/2W
⚠R439	BZ210072	R801R7223F	RC	22K OHM 1/10W
⚠R440	BZ210142	R903N8513J	RC	51K OHM 1/8W
⚠R441	BZ210143	R903N8563J	RC	56K OHM 1/8W
⚠R442	BZ210075	R801R7153F	RC	15K OHM 1/10W
⚠R444	BZ210181	R801R7273F	RC	27K OHM 1/10W
⚠R447	BZ210021	R65582680J	R,FUSE	68 OHM 1/2W
R449	BZ210103	R65584680J	R,FUSE	68 OHM 1/4W
⚠R450	BZ210159	R6558A2R2J	R,FUSE	2.2 OHM 2W
⚠R500	BZ210080	R0G3K2275K	RC	2.7M OHM 1/2W
⚠R501	BZ210146	R5Y2CD2R2J	R,CEMENT	2.2 OHM 5W
⚠R510	BZ210081	R002T2124J	RC	120K OHM 1/2W
R520	BZ210083	R3X28A010J	R,METAL OXIDE	1 OHM 2W
⚠R529	BZ210084	R4X5T4272F	R,METAL	2.7K OHM 1/4W
⚠R542	BZ210085	R33681R18J	R,METAL	0.18OHM 1W
R632	BZ210087	R3X18A221J	R,METAL OXIDE	220 OHM 2W
⚠R802	BZ210050	R3X18A123J	R,METAL OXIDE	12K OHM 2W
⚠R805	BZ210050	R3X18A123J	R,METAL OXIDE	12K OHM 2W
⚠R810	BZ210050	R3X18A123J	R,METAL OXIDE	12K OHM 2W
R1080	BZ210160	R002T4010J	RC	1 OHM 1/4W
R1085	BZ210119	R002T4102J	RC	1K OHM 1/4W
		CAPACITORS		
C354	BZ110135	E02L02222M	CE	2200 UF 16V
C402	BZ110077	E02L04102M	CE	1000 UF 35V
⚠C407	BZ110078	E02L03102M	CE	1000 UF 25V
C423	BZ110136	P4J7F3394J	CMPP	0.39 UF 250V PMS
⚠C424	BZ210161	P4N8FJ682H	CMPP	0.0068UF 1.25KV
⚠C425	BZ110152	C0JLYR7B3K	CC	0.0012UF 2KV YR
⚠C431	BZ110103	E02LTD100M	CE	10 UF 250V
⚠C502	BZ110061	C0JTB0513K	CC	0.001 UF 500V B
⚠C503	BZ110061	C0JTB0513K	CC	0.001 UF 500V B
⚠C506	BZ110138	P2472B224M	CMP	0.22UF 275V PHE840
⚠C507	BZ110012	E51CGC471M	CE	470 UF 200V
⚠C510	BZ110018	E5EZT4101M	CE	100 UF 35V
⚠C511	BZ110029	E5EZT3471M	CE	470 UF 25V
C514	BZ110113	C0JLYR7K3K	CC	0.0027UF 2KV YR
C517	BZ110115	C0JLYR7H3K	CC	0.0022UF 2KV YR
⚠C521	BZ110139	E62NFB101M	CE	100 UF 160V
C524	BZ110100	E5EZ02222M	CE	2200 UF 16V
C525	BZ110154	E02L00102M	CE	1000 UF 6.3V
⚠C530	BZ110140	C034F0JQ3M	CC	0.0047UF 125V MX
C535	BZ110122	C0JLYR7U2K	CC	680 PF 2KV YR
C550	BZ110159	E50HT5100M	CE	10 UF 50 V
C560	BZ110123	C0JLYR713K	CC	0.001 UF 2KV YR
C666	BZ110099	E02LT1471M	CE	470 UF 10V
C701	BZ110098	CHGTB0413K	CC	0.001 UF 50V B
C801	BZ110141	C0HHB07H3K	CC	0.0022UF 2KV B
C819	BZ110141	C0HHB07H3K	CC	0.0022UF 2KV B
		DIODES		
D401	BZ410043	D2WT011E10	DIODE,SILICON	11E1-EIC
D402	BZ410014	D2LTPG06J0	DIODE,SILICON	RMPG06J-G3
D403	BZ410019	D97U03001B	DIODE,ZENER	MTZJ30B T-77
D404	BZ410019	D97U03001B	DIODE,ZENER	MTZJ30B T-77
D405	BZ410043	D2WT011E10	DIODE,SILICON	11E1-EIC
⚠D408	BZ410018	D94TA27011	DIODE,ZENER	HZ27-1L TD
⚠D409	BZ410017	D94TA11B13	DIODE,ZENER	HZ11B3L TD
D410	BZ410022	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
⚠D412	BZ410014	D2LTPG06J0	DIODE,SILICON	RMPG06J-G3
⚠D413	BZ410014	D2LTPG06J0	DIODE,SILICON	RMPG06J-G3
⚠D501	BZ410044	D4LZBL06L0	DIODE	GBL06L-6177
D502	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D504	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
⚠D505	BZ410076	D2WXB290S0	DIODE,SILICON	SB290S
D506	BZ410014	D2LTPG06J0	DIODE,SILICON	RMPG06J-G3
D507	BZ410057	D28015DF60	DIODE,SILICON	15DF6
D508	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
⚠D510	BZ410080	D2WXRU2AM0	DIODE,SILICON	RU2AM-EIC
⚠D512	BZ410076	D2WXB290S0	DIODE,SILICON	SB290S
D513	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D514	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
⚠D515	BZ410037	D97U03301B	DIODE,ZENER	MTZJ33B T-77
⚠D517	BZ410059	D2WT11ES10	DIODE,SILICON	11ES1-EIC
D518	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
⚠D519	BZ410076	D2WXB290S0	DIODE,SILICON	SB290S

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
		DIODES		
D520	BZ410012	D28TQS04N0	DIODE SCHOTTKY	11EQS04N-TA1B2
D521	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D526	BZ410008	D23U1003A3	DIODE,SCHOTTKY	SB10-03A3
D528	BZ410021	D97U05R61B	DIODE,ZENER	MTZJ5.6B T-77
D601	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D602	BZ410078	D97U08R21A	DIODE,ZENER	MTZJ8.2AT-77
D605	BZ410059	D2WT11ES10	DIODE,SILICON	11ES1-EIC
D608	BZ410008	D23U1003A3	DIODE,SCHOTTKY	SB10-03A3
D609	BZ410022	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D610	BZ410022	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D611	BZ410022	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D612	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D613	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D614	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D615	BZ410022	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D618	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D619	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D620	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D621	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D791	BZ410005	002132Q130	LED	SLZ-936C-07-S-T1
D792	BZ410005	002132Q130	LED	SLZ-936C-07-S-T1
D793	BZ410005	002132Q130	LED	SLZ-936C-07-S-T1
D801	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D802	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D803	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D1003	BZ410004	0010600060	LED	SID1050CM
D1014	BZ410021	D97U05R61B	DIODE,ZENER	MTZJ5.6B T-77
		ICS		
⚠IC351	BZ611001	I01DP75110	IC	AN7511
⚠IC401	BZ611053	I01TD55220	IC	AN5522
IC501	BZ611054	I1KA98R050	IC	KIA78R05PI
⚠IC502	BZ611041	I2BT066230	IC	STR-G6623
IC601	BZ611055	I06FC61206	IC	M61206FP
IC1001	BZ611056	I56F57059A	IC	OEC7059A
IC1003	BZ611057	IC7J0311A0	IC	R3111N311A/C-TR
IC1004	BZ611058	I03DQ18800	IC	LB11880
IC1099	BZ610187	A58101A015	IC	S-24C04BDP-LA
IC4001	BZ611059	I03F3201M0	IC	LA71201M-MPB
		TRANSISTORS		
Q401	BZ510067	TNAAC05002	COMPOUND TRANSISTOR	KRC103RTK
Q402	BZ510057	TAAT01281Y	TRANSISTOR SILICON	KTA1281_Y
Q403	BZ510068	TNAAJ05003	COMPOUND TRANSISTOR	KRC111RTK
Q404	BZ510049	TPYJD05001	COMPOUND TRANSISTOR	DTA144EKAT146
⚠Q405	BZ510075	TC3T02271E	TRANSISTOR,SILICON	2SC2271E-AE
⚠Q406	BZ510036	TD30026270	TRANSISTOR,SILICON	2SD2627LS-CBC11
Q501	BZ410055	0002500450	PHOTO COUPLER	TLP621(GR)
Q502	BZ510045	TNYJD05001	COMPOUND TRANSISTOR	DTC144EKAT146
Q503	BZ510004	TA3T016240	TRANSISTOR,SILICON	2SA1624-AA
Q507	BZ510069	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
Q508	BZ510045	TNYJD05001	COMPOUND TRANSISTOR	DTC144EKAT146
Q601	BZ510001	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
Q602	BZ510070	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT
Q603	BZ510070	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT
Q604	BZ510042	TDWT00400E	TRANSISTOR,SILICON	2SD400E
Q605	BZ510042	TDWT00400E	TRANSISTOR,SILICON	2SD400E
Q606	BZ510070	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT
Q608	BZ510020	TNYJB05001	COMPOUND TRANSISTOR	DTC114EKAT146
Q609	BZ510071	TNAAB05003	COMPOUND TRANSISTOR	KRC102RTK
Q611	BZ510071	TNAAB05003	COMPOUND TRANSISTOR	KRC102RTK
⚠Q804	BZ510009	TC3F042170	TRANSISTOR,SILICON	2SC4217(D,E)-RAC
⚠Q805	BZ510009	TC3F042170	TRANSISTOR,SILICON	2SC4217(D,E)-RAC
⚠Q806	BZ510009	TC3F042170	TRANSISTOR,SILICON	2SC4217(D,E)-RAC
Q1002	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q1003	BZ410041	0002700530	PHOTO COUPLER	RPI-352Q01R
Q1004	BZ510067	TNAAC05002	COMPOUND TRANSISTOR	KRC103RTK
⚠Q1005	BZ410049	0002700590	PHOTO COUPLER	RPI-301
Q1006	BZ510071	TNAAB05003	COMPOUND TRANSISTOR	KRC102RTK
Q1009	BZ410041	0002700530	PHOTO COUPLER	RPI-352Q01R
Q1013	BZ410042	0000100380	PHOTO TRANSISTOR	PNA2604M010R
Q1023	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q4001	BZ510069	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
Q4002	BZ510069	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
Q4003	BZ510072	TPAAC05002	COMPOUND TRANSISTOR	KRA103RTK
Q4005	BZ510073	TAATA12660	TRANSISTOR,SILICON	KTA1266-AT(Y,GR)
Q4006	BZ510070	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT
Q4007	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q4009	BZ510001	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description		
		TRANSISTORS			
Q4010	BZ510001	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S	
Q4011	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S	
Q4012	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S	
Q4201	BZ510071	TNAAB05003	COMPOUND TRANSISTOR	KRC102RTK	
Q4202	BZ510071	TNAAB05003	COMPOUND TRANSISTOR	KRC102RTK	
		COILS &TRANSFORMERS			
L004	BZ310124	02AHA896A1	CORE,FERRITE	W5T18.4X10X9.6	
L005	BZ310124	02AHA896A1	CORE,FERRITE	W5T18.4X10X9.6	
L401	BZ310004	021679472K	COIL	4.7 MH	
⚠L502	BZ310099	029T000092	COIL,LINE FILTER	1R0A103F24	
⚠L503	BZ310092	028R200029	COIL,DEGAUSS	8R200029	
L601	BZ310101	0216A61R2K	COIL	1.2 UH	
L603	BZ310040	02167F470J	COIL	47 UH	
L605	BZ310112	021LA61R2K	COIL	1.2 UH	
L607	BZ310058	021LA6220K	COIL	22 UH	
L612	BZ310068	021LA66R8K	COIL	6.8 UH	
L801	BZ310002	021673101K	COIL	100 UH	
L1001	BZ310009	021LA62R2K	COIL	2.2 UH	
L1002	BZ310079	021LA6101J	COIL	100 UH	
L4001	BZ310039	02167F220J	COIL	22 UH	
L4003	BZ310041	02167F101J	COIL	100 UH	
L4004	BZ310041	02167F101J	COIL	100 UH	
L4005	BZ310040	02167F470J	COIL	47 UH	
L4006	BZ310040	02167F470J	COIL	47 UH	
L4009	BZ310041	02167F101J	COIL	100 UH	
T401	BZ310080	03305Y0018	TRANS,HORIZONTAL DRIVE	305Y001	
⚠T501	BZ310094	048129015S	TRANSFORMER,SWITCHING	8129015S	
T4001	BZ310114	031626009R	COIL,BIAS OSC	1626009	
		JACKS			
⚠J351	BZ614002	060G131014	RCA JACK	HTJ-035-28A	
J701	BZ614172	060Q401075	RCA JACK	AV2-24D-5	or
	BZ614257	060Q401870	RCA JACK	AV2-24-5	
⚠J801	BZ614057	066C130015	SOCKET,CATHODE RAY TUBE	CVT3275-5102	
		SWITCHES			
SW1001	BZ612002	0508221001	SWITCH (LEAF)	SPVF130100	
SW1002	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R	
SW1003	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R	
SW1004	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R	
SW1005	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R	
SW1006	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R	
SW1007	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R	
SW1008	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R	
SW1009	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R	
SW1010	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R	
SW1011	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R	
SW1012	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R	
		VARIABLE RESISTORS			
VR502	BZ210024	V1163L2BTC	VOLUME,SEMI FIXED	EVNCYAA03BY2	
		P.C.BOARD ASSEMBLIES			
PCB030	BZ610188	A58101A03A	PCB ASS'Y	TE9A16A	
PCB110	BZ610189	A58101A11A	PCB ASS'Y	TCA354A	
PCB550	BZ610053	A4C831B550	SEE CHASSIS REPLACEMENT PARTS LIST		
PCB800	BZ610190	A58101A01A	PCB ASS'Y	VMA213A	
		MISCELLANEOUS			
B402	BZ310016	024AT03655	CORE,BEADS	BL01RN1-A63T6	
B502	BZ310015	024AT03482	CORE,BEADS	BL02RN2-R62T4	
B503	BZ310016	024AT03655	CORE,BEADS	BL01RN1-A63T6	
B505	BZ310015	024AT03482	CORE,BEADS	BL02RN2-R62T4	
B602	BZ310016	024AT03655	CORE,BEADS	BL01RN1-A63T6	
B604	BZ310045	024AT03481	CORE,BEADS	BL02RN1-R62T2	
BL001	BZ310014	023C00022A	COIL BALUN	HPN-01	
CD351	BZ614131	06CH27091A	CORD CONNECTOR	CH27091A	
CD352	BZ614132	06CH25093A	CORD CONNECTOR	CH25093A	
CD353	BZ614096	06CH12426A	CORD CONNECTOR	CH12426A	
⚠CD501	BZ614197	1207414905	CORD AC BUSH	07414905	
CD503	BZ614133	069X620040	CONNECTOR	JM-2BK-61	
CD801	BZ614175	06CU82039A	CORD CONNECTOR	SM1098-009-1A	
CF601	BZ613014	1022T45R72	FILTER,SAW	SAF45MFY220ZR	
CF603	BZ613015	1011T4R504	FILTER,CERAMIC	EFCT4R5YS5A	
CF604	BZ613016	1011T4R517	FILTER,CERAMIC	EFCT4R5MW5	
CP351	BZ614135	0694260139	CONNECTOR PCB SIDE	173979-6	
CP352	BZ614019	069X120249	CONNECTOR PCB SIDE	B2B-EH-A	
CP353	BZ614102	0694270139	CONNECTOR PCB SIDE	173979-7	
CP354	BZ614136	0694250139	CONNECTOR PCB SIDE	173979-5	
⚠CP401	BZ614020	069X450029	CONNECTOR PCB SIDE	B05B-DVS	
⚠CP502	BZ614018	069W420029	CONNECTOR PCB SIDE	TV-50P-02-A1	
CP503	BZ614137	069X620030	CONNECTOR PCB SIDE	RE-H022TD-1130	

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description		
		MISCELLANEOUS			
CP801	BZ614017	069W320018	CONNECTOR PCB SIDE	TS-80P-02-V1	
CD1002	BZ614198	122F071901	CORD JUMPER	2F071901	
CP1003	BZ614138	0694240139	CONNECTOR PCB SIDE	173979-4	
CP1004	BZ614010	0697280590	CONNECTOR PCB SIDE	TMC-J08P-B1	
CP1005	BZ614086	069J770029	CONNECTOR PCB SIDE	IMSA-9604S-07Z14	
CP1006	BZ614014	069J740029	CONNECTOR PCB SIDE	IMSA-9604S-04Z14	
CP4001	BZ614011	0697290620	CONNECTOR PCB SIDE	TOC-C09X-A1	
CP4002	BZ614050	069J760029	CONNECTOR PCB SIDE	IMSA-9604S-06Z14	
CP4003	BZ614009	0697120320	CONNECTOR PCB SIDE	TMC-T02X-E1	
CP851A	BZ614139	067R010019	WIRE HOLDER	51048-1010	
CP851B	BZ614139	067R010019	WIRE HOLDER	51048-1010	
CUS011	BZ710279	800WFAA006	CUSHION A		
CUS011	BZ710279	800WFAA006	CUSHION A		or
	BZ710001	800WF00004	CUSHION-A		
CUS012	BZ710149	800WFAA008	CUSHION C		or
	BZ710002	800WF00019	CUSHION-C		
EL001	BZ614043	124116281A	EYE LET	XRY16X28BD	
EL002	BZ614044	124120301A	EYE LET	XRY20X30BD	
⚠F501	BZ614177	081PC05004	FUSE	51MS050LCC	
⚠FB401	BZ310097	043219011F	TRANSFORMER,FLYBACK	FQI-20B001	
FH501	BZ614005	06710T0006	HOLDER,FUSE	EYF-52BC	
FH502	BZ614005	06710T0006	HOLDER,FUSE	EYF-52BC	
OS1001	BZ614199	077Q004017	REMOTE RECEIVER	PIC-37243SR	
⚠SP351	BZ614128	070W133014	SPEAKER	P-300S-2	
⚠TH501	BZ410079	DF5EL3R0A0	DEGAUSS ELEMENT	ZPB45BL3R0A	
TM101	BZ614223	076N0DQ030	TRANSMITTER	VC-L4B	
⚠TU601	BZ610125	0145K00055	TUNER,VHF-UHF	TECC1040PG32D	
⚠V801	BZ614165	098Q200481	CRT W/DY	A48AGY13X77	
X602	BZ613004	100CT3R505	CRYSTAL	HC-49/C	
X1001	BZ613002	100CT01207	CRYSTAL	HC-49/U-S	
X1002	BZ613006	100DA32R01	CRYSTAL	DT-26	
X4001	BZ613017	100CT3R502	CRYSTAL	HC-49/U	

RESISTOR

RC..... CARBON RESISTOR

CAPACITORS

CC..... CERAMIC CAPACITOR
CE..... ALUMI ELECTROLYTIC CAPACITOR
CP..... POLYESTER CAPACITOR
CPP..... POLYPROPYLENE CAPACITOR
CPL..... PLASTIC CAPACITOR
CMP..... METAL POLYESTER CAPACITOR
CMPL..... METAL PLASTIC CAPACITOR
CMPP..... METAL POLYPROPYLENE CAPACITOR

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